

**NATIONAL OCCUPATIONAL EXPOSURE SURVEY**  
**ANALYSIS OF MANAGEMENT INTERVIEW RESPONSES**

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## FOREWORD

The National Occupational Exposure Survey (NOES) was a two and a half year field study conducted from 1981-1983.

The NOES, like its predecessor, the 1971-1974 National Occupational Hazard Survey (NOHS), was designed to provide data descriptive of health and safety conditions in the work environment of the United States. Specifically, the survey was intended to provide data on management policy and practice with regard to occupational safety and health and the extent and conditions of potential worker exposure to chemical, physical, and biological agents.

In the course of the survey, 4,490 facilities in 98 different geographical areas were surveyed. The survey was designed to be representative of facilities employing eight or more workers in the agricultural services, oil and gas exploration, construction, manufacturing, wholesale/retail trade, services, and health services industries. Specific details on the conduct and statistical design of the survey are available in Volumes I and II of the NOES series.

This volume in the projected NOES series of publications is devoted to analysis of management responses to the questionnaire administered during the survey. The data contained herein is intended to characterize management policy and practice in several areas relating to worker safety and health by both industry type and facility size. The data should be used carefully, recognizing the intent and guidelines of the survey as well as the statistical design features implicit to the conduct of this survey.

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## INTRODUCTION

The National Occupational Hazard Survey (NOHS) Was conducted during 1972-1974 because of the recognized need for data on occupational health practices in industry and on worker exposure to chemical, physical, or biological agents in the various industries and occupations. While the data from this survey proved to be quite useful, it was obvious by the late 1970's that it had become dated, and did not reflect the substantial changes which had occurred since 1974.

Conduct of the National Occupational Exposure Survey (NOES) from 1981-1983 provided the necessary update of the data on occupational exposure to specific agents and industrial policies in occupational health.

The NOES sample consisted of 4,490 industrial facilities in 98 defined geographical areas. This sample was derived using a stratified multi-stage statistical procedure which considered geographical location, facility type (by Standard Industrial Classification) and facility-specific employment size. Agricultural production, mining, financial, and government activities were excluded from the survey. Volume II of the NOES series details the statistical base of the survey, including sampling, screening, verification, and data projection procedures.

Field work for the NOES was performed by teams of specially trained surveyors. All surveyors were college graduates, and had received 11 weeks of classroom training in industrial hygiene and safety, hazard recognition, survey procedures and guidelines in addition to in-field training prior to independent conduct of facility surveys. Field activity began in November 1981, and continued until May 1983. Volume I of the NOES series provides information on survey background, surveyor training, and the interpretations and guidelines used during the survey.

Each facility survey consisted of two major segments. The first segment involved the administration of a standardized questionnaire to facility management. This interview obtained such facility-specific data as the number of employees (male and female) and profiled management policy and practice with regard to medical services, industrial hygiene/safety programs, and general employee health related recordkeeping. The second segment consisted of a walk-through of the work areas of the facility. During this walk-through, the surveyor listed, by job title, the employees observed to be potentially exposed to workplace agents. In addition to listing the agents, the surveyor recorded the observed exposure controls and exposure durations for each agent as directed by survey guidelines.

This volume is devoted to presentation of the data gathered during administration of the management interview questionnaire, and provides analysis of industrial management responses to that questionnaire by industry and plant size. These analyses provide estimates of the numbers of employee and facilities in the U.S. operating under specific management policies in the areas of safety and health. Analysis of potential worker exposure to agents in the workplace will be presented in succeeding publications.

**NATIONAL OCCUPATIONAL EXPOSURE SURVEY  
(1981-1983)  
Analyses of Management Interview Responses**

**Section I - Survey Background and Explanation**

- Sampling Strategy
- Survey Data and Analysis
- Presentation of Survey Results
- National Estimates

## A. Sampling Strategy

The 1981-1983 National Occupational Exposure Survey (NOES) consisted of on-site observational surveys in a sample of 4,490 establishments which had been selected to represent most sectors of the American workforce covered by the Occupational Safety and Health Act of 1970. Only those establishments performing business, service, or industrial activities included in a specific set of Standard Industrial Classification (SIC) codes <sup>1</sup> were eligible to be included in the NOES.

Codes for the Major Industrial Groups (MIG) included in the NOES are shown in Table 1, and the 2-digit Standard Industrial Classification (SIC) codes selected within each of the MIG codes are shown in Table 2. Descriptions of the activity in each of these classifications are found in Appendices A and B.

The target population for the NOES was thus defined as those establishments or job sites located in the 50 states, employing eight or more, and with a business or service activity defined as one of the target industrial groups listed in Appendices A and B.

Only those establishments in the target industrial groups with eight or more employees were considered to be in-scope in the NOES to maintain comparability with the earlier National Occupational Hazard Survey <sup>2</sup> (NOHS) and because accurately surveying establishments with less than eight employees would have greatly enlarged the survey sample while contributing little to coverage of the worker population.

The target population excluded establishments engaged in agricultural production, any mining activity except oil and gas extraction, railroad transportation, private households, finance institutions, and all Federal, State and municipal government facilities.

TABLE 1. MAJOR INDUSTRIAL GROUPS IN THE NOES

Code	Description	Code	Description
07	Agricultural Services	40-49	Transportation
13	Oil and Gas Extraction	50-59	Wholesale/Retail Trade
15-17	Construction	70-79	Services
20-39	Manufacturing	80	Health Services

The NOES used a two-stage sampling strategy for most of the sample. The first stage involved the selection of a defined group of counties comprising the geographical or Primary Sampling Units (PSUs) for the NOES. The second stage, selection of facilities to be surveyed, was done using a systematic procedure within the chosen PSUs.

TABLE 2. STANDARD INDUSTRIAL CLASSIFICATIONS IN THE NOES

Code	Description	Code	Description
07	Agricultural Services	35	Machinery, Except Electrical
13	Oil and Gas Extraction	36	Electrical & Electronic Machinery
15	General Building Contractors	37	Transportation Equipment
16	Construction Other than Building	38	Measuring, Analyzing & Control Instruments
17	Special Trade Contractors	39	Miscellaneous Manufacturing
20	Food and Kindred Products	41	Local & Suburban Transit
21	Tobacco Manufacturers	42	Freight Transportation & Warehousing
22	Textile Mill Products	43	Water Transportation
23	Apparel and Other Finished Products	45	Transportation by Air
24	Lumber and Wood Products Except Furniture	48	Communication
25	Furniture and Fixtures	49	Electric, Gas, & Sanitary Services
26	Paper and Allied Products	50	Wholesale Trade, Durable Goods
27	Printing and Publishing	51	Wholesale Trade, Non-Durable Goods
28	Chemicals and Allied Products	55	Automotive Dealers and Gas Stations
29	Petroleum Refining	72	Personal Services
30	Rubber and Miscellaneous Plastic Products	73	Business Services
31	Leather and Leather Products	75	Automotive Services
32	Stone, Clay, Glass, & Concrete Products	76	Miscellaneous Repair Services
33	Primary Metal Industries	80	Health Services
34	Fabricated Metal Products, etc. Machinery and Transportation Equipment		

Very large establishments (2,500 or more employees) were sampled separately in order to maintain more nearly equal probabilities of selection for all facilities in this size category.

First stage selection of geographical areas was accomplished by random selection from strata defined by geography, number of employees, and concentration of establishments in the target population. Second stage selection of establishments employed systematic sampling from a list of establishments ordered by number of employees and Standard Industrial Classification (SIC). The second stage sample was enlarged by 25 percent, and establishments in this enlarged sample were screened by telephone to determine eligibility for inclusion in the survey.



A list of the 4-digit Standard Industrial Classifications of the 4,490 establishments for which surveys were completed in the NOES is shown in Appendix C. The sampling plan is described in more detail in National Occupational Exposure Survey Sampling Methodology<sup>3</sup> and in Appendix D.

## **B. Survey Data and Analysis**

### **1. Survey Data**

The NOES surveyor's manual, National Occupational Exposure Survey Guidelines<sup>4</sup>, was prepared to provide standardized procedures to the personnel participating in the actual field collection of data and as documentation of the interpretations and guidelines under which the survey was conducted. While some portions of that volume, particularly the text dealing with the question intent and interpretation, are present in abbreviated form in this report, the reader is referred to the field guidelines for a complete explanation of the guidelines for the 1981-1983 field phase of the survey.

A complete copy of the 66-question National Occupational Exposure Survey (NOES) Management Interview questionnaire is presented in Appendix E. The administration of the questionnaire, and the resultant collection and analysis of data constituted Part I of the NOES, which is the subject of this volume. Part II consists of occupational exposure data collection and analysis, which will be the subject of future publications.

### **2. Data Editing and Verification**

Part I questionnaire forms received from the field were logged and subjected to a multi-stage evaluation process prior to data entry into a mainframe computer system. Initial receipt of the forms involved manual comparison of the establishment name, address, number of employees, Standard Industrial Classification, and facility identification number with that expected from the sampling plan.

Following initial verification, the actual names and addresses of the surveyed establishments were suppressed and not retained as part of the facility-specific records used during the analysis of the data. This information was thereafter regarded as confidential data. This was to ensure the anonymity of surveyed industrial establishments. Facility-specific records were instead accessed and manipulated for analysis using the facility identification number assigned during the sample selection phase.

Individual questionnaire responses were coded and keypunched for edit in a mainframe computer. Establishment activity was coded using 1972 Standard Industrial Classification codes and questionnaire responses were coded using the codes included on the NOES questionnaire.

The computerized edit was essentially a verification and resolution process. Subject to the directed non-response guidelines (e.g., that no numerical count be found for nurse employment if a previous response indicated no nurse employment), all data fields were checked for expected data. This data was then screened for expected values (e.g., numerical or alphabetic characters) and discrepancies resolved by comparison with the raw questionnaire data, or with establishment personnel. The final edited file contained 4,490 records, one for each facility, which included responses for each of the 66 questions asked on the NOES Part I questionnaire.

### 3. Estimation Procedures

National estimates of the numbers of employees and number of establishments conducting business in the SIC codes surveyed in the NOES (see Appendix B) are presented in this report. Two stages of ratio estimation were used in this process. Variances of estimates were calculated using the method of replications.

A probability of selection was associated with each of the steps followed in selecting the sample establishments to be interviewed. Inverses of these probabilities define sample weights which indicate how much each establishment's results contribute to estimated totals. Initial estimates of national totals were obtained by multiplying each establishment's totals by its sample weight and summing across establishments. Two stages of ratio estimation were used to improve the precision of the estimate before the final publication estimate was determined. The first stage ratio estimation factor was based on establishment counts by employee size class within SIC. The second stage ratio estimation factor was based on employee counts (or establishment counts for establishments with more than 1000 employees) by employee size class within SIC.

Each estimate has a sample error associated with it. Calculation of the sampling errors was handled using the method of replications. The method requires that the estimation procedures be independently carried out several times (replicated) using subsamples of the original sample.

Use of ratio estimation and the method of replications to make national projections from the NOES sample data is detailed in the National Occupational Exposure Survey Sampling Methodology<sup>3</sup> and in Appendix D.

### 4. Sampling and Nonsampling Error

Sampling errors in any survey may result from the sample design used. Methods of optimizing the sample design for a survey typically involve establishing a cost function for the study, expressing the sampling variance, and solving the equation which will produce the minimum variance for a fixed costs<sup>5</sup>. This approach was an oversimplification of the needs for the NOES because it assumed there was a single estimate whose variance was to be minimized. In the NOES, estimates were needed for both numbers of employees and establishments, and quite different sample designs could have been chosen depending on which estimate was considered to be of greatest importance.

The sample design ultimately developed for the NOES maximized the reliability of estimates of numbers of employees. The sample selection methods used for the NOES resulted in variance estimates that are slightly biased (usually overestimates). Operational constraints also affected sampling error.

Non-sampling errors in the NOES were minimized by the standardized training and manuals available to each surveyor, and by the extensive manual and computerized edit of the questionnaire data. The effect of non-response (which was less than 0.3%) was minimized since the sample design had made provision for a "shadow sample" from which substitute establishments similar those initially selected could be found.

Responses used for calculations were also obtained from management interviews, and may not accurately have reflected in-plant conditions, although these responses were subject to the field verification and interpretation procedures outlined in the guidelines for field activity.

### C. Presentation of Survey Results

The NOES Management Interview questionnaire was administered at each of the 4,490 facilities in the NOES sample. The questions are subdivided into four major subject areas. The first of these subject areas consists of general facility information which characterizes sampled facilities by industrial classification, products, age, workforce size, and union presence. The second and third subject areas contain profile information on the provision of medical and industrial hygiene/safety services to employees as a result of management policy. The final portion of the questionnaire addresses the employee health-related recordkeeping practices of the sampled facility. This publication is organized to present analyses grouped according to these four major subject areas.

Most of the items of the NOES are dichotomies indicating whether a facility possessed a given characteristic or not; (e.g., does the facility have designated personnel for emergency health care)? Estimates of the national number, the standard error of the estimated number, and the percentage of facilities in that SIC that are projected to have the characteristic are given for three facility-size classifications within each Major Industrial Group (MIG). Similar estimates for the number and percentage of employees in such facilities in the nation are also given. Both sets of estimates are produced for each Standard Industrial Classification (SIC) as well.

Figure 1 (Explanation of Standard Table Format) contains a generalized description of the most common tabular format employed in the data presentation sections of this volume. Occasionally, as in the tabular presentation of continuous variable data, the standard tabular format was not suitable. However, these tables should be self-explanatory given an understanding of the standard tabular format, since the tabular titles and headings identify the data presented.

FIGURE 1. EXPLANATION OF STANDARD TABULAR FORMAT

NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-11

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
HAVE DESIGNATED PERSONNEL FOR EMERGENCY HEALTH CARE

MAJOR GROUP	PLANTS			TOTAL	EMPLOYEES			TOTAL
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)		SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	
07	2253* (1028) 40.9%	...	...	2253* (1028) 40.0%	32041* (12878) 30.9%	...	...	32041* (12878) 28.9%
13	2991* (992) 34.8%	501* (202) 49.1%	46* (52) 100.0%	3538* (1069) 36.6%	58732 (11587) 28.1%	106244* (43807) 61.1%	31383* (35291) 100.0%	196359* (62727) 47.4%

These column headers identify the areas displaying estimates of number of plants or employees in plants by the employment size ranges shown in parenthesis

No large plants or employees in large plants in Major Group 07 were observed

Major Industrial Group codes- See Table 1 and Appendix A

Standard Industrial Classification codes- See Table 2 and Appendix B

The estimated number of workers in medium plants within Major Group 13 for the variable tabulated is equal to 106,244. The asterisk indicates that the standard error of 43,807 is more than 25% of the estimate, and that the estimate may be unreliable. The estimate is equal to 61.1% of the estimated total number of workers in medium size plants in Major Group 13. See Table 3.

The estimated number of large plants in Standard Industrial Classification 35 for the variable tabulated is 784, with a standard error of 79. The estimate of 784 is equal to 100% of the estimated total number of large plants in Standard Industrial Classification 35. See Table 4.

NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983)

TABLE NO. III-12 (CONTINUED)

SIC CODE	PLANTS			TOTAL	EMPLOYEES			TOTAL
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)		SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	
34	8294 (1059) 44.8%	2707 (164) 86.7%	318* (84) 91.9%	11319 (1050) 51.5%	300455 (27184) 54.1%	529577 (30343) 88.8%	287700* (93825) 82.0%	1117732 (106637) 74.4%
35	8949 (1158) 39.5%	2991 (199) 87.8%	784 (79) 100.0%	12723 (1219) 47.4%	287906 (30684) 47.4%	590518 (20453) 89.3%	1112933 (147534) 100.0%	1991357 (153948) 83.6%

Table 3 (Questionnaire Items Presented in the Analysis of Management Interview Responses) presents a list of the Management Interview questionnaire item responses analyzed in this volume.

Establishments surveyed during the NOES did not represent all possible industrial activities included at the MIG or 2-digit SIC level of classification, and the estimates presented represent only the industrial activities actually surveyed. The industrial activities actually surveyed are listed in Appendix C.

In most cases, tabular data presentations in this volume are accompanied by graphic presentations of the same data. The graphic presentations generally are summaries of the tabular data across facility size ranges, or SICs, or both. Depending on the characteristic being presented, several graphic presentations may accompany a single table.

The decision as to the type and number of graphic presentations accompanying each tabular format was based on anticipation of questions from the professional community. The rationale for the inclusion of the graphic analysis is to aid the reader in interpreting the data displayed in tabular form, and to provide him or her with pointers to specific areas of the tabular data which may be of particular interest.

Space limitations precluded the display of Major Industrial Group (MIG) or Standard Industrial Classification (SIC) titles in the tabular or graphic data presentations in this volume. Accordingly, a Graphics/Tabular Format Guide is included as an insert. This guide contains abbreviated titles for all the MIG groups (detailed in Table 1 of this section and in Appendix A) and SIC codes (detailed in Table 2 of this section and in Appendix B) profiled in this report. This guide was designed to line up with the appropriate MIG or SIC display in graphic or tabular form, and provide an immediate reference to their descriptive titles.

It was our intent to produce an analysis of the NOES Part I data in a convenient reference volume format which would provide answers to most of the anticipated questions from the professional community. However, the Part I data contains more possibilities for analytical presentation than could be contained in this volume. Therefore, the data base assembled from the survey observations, and our analytical procedures, were so designed that specific analyses not presented in this report could be performed upon request.

#### **D. National Estimates of Industries Included in the NOES**

Estimates of the total number of employees and facilities in the NOES target SICs are presented in Tables 4 and 5.

The totaled estimates across all categories are not identical in Tables 4 and 5. This is because estimates for certain industrial groups had such a high standard error that they were not considered to be reliable, and thus unsuitable for publication. The estimates were associated with specific industrial groups which were undersampled. Undersampling was determined by use of the coefficient of variation of size <sup>5</sup>. A cutoff value of .25 for the coefficient was used (see Appendix D).

**TABLE 3. QUESTIONNAIRE ITEMS PRESENTED IN ANALYSIS  
OF MANAGEMENT INTERVIEW RESPONSES**

<b>Questionnaire Item Number</b>	<b>Description</b>	<b>Page</b>
8	Years of Current Activity at Current Location	17
9 & 10	Number of Shifts Per Facility and Number of Hours Per Shift	23
11	Employees on Payroll for All Shifts	31
12	Workers in Non-Administrative Areas	39
13	Labor Unions in the Workplace	44
14	Existence of An On-Site Health Unit	60
15	Presence of a Trained Individual to Provide First Aid	75
16	Employment of Physicians to Provide Health Care	90
17	Use of Off-Site Sources of Health Care	105
18	Estimated Number of Physician Hours Devoted to Industrial Worker Health Care	120
19	Use of Employed Nurses to Provide Health Care	126
20	Estimated Number of Nurses Employed to Provide Health Care to Industrial Workers	133
21	Estimated Number of Nurse Hours Devoted to Industrial Worker Health Care	143
22	Examination or Tests Provided By Industrial Facilities	148
23	Required Pre-Placement or Pre-Hiring Examinations	262
24	Recording of Health Information on New Employees	273
25	Required Post-Illness Medical Examinations	284
26	Required Exit Medical Examinations	295
27	Retention of Medical Records	306
28	Employment of Occupational Safety or Occupational Health Personnel	319
29	Occupational Health and Safety Specialists and Their Activities	334

TABLE 3 (Continued)

Questionnaire Item Number	Description	Page
30	Use of Industrial Hygiene Consultation Services	354
31	Use of Occupational Safety Consultation Services	361
32	Existence of a Program to Regularly Monitor Physical Agents	368
33	Retention of Records From a Physical Agent Monitoring Program	385
34	Existence of a Program to Regularly Monitor Fumes and Gases	395
35	Methods of Fume and Gas Monitoring	401
36	Direct Reading Instruments Used in Fume Monitoring	406
37	Retention of Records From Fume Monitoring Programs	416
38	Substitution of Chemical Materials	426
39	Chemical Substitutions Made to Reduce Worker Exposure	435
40	Chemicals Substituted as a Result of Government Inspection	445
41	Process of Equipment Modifications Made in the Past Five Years	454
42	Equipment or Process Modifications Made to Reduce Worker Exposures	463
43	Equipment or Process Modifications Made as a Result of Government Inspection	473
44	Type of Equipment or Process Modification	483
45	Plants Which Recirculate Exhaust Air	494
46	Areas of the Facility Involved in Recirculation of Exhaust Air	500
47	Use of Personal Protective Devices Required or Recommended	501
48	Source of Personal Protective Devices Used by Workers	511
49	Responsibility for Maintenance of Personal Protective Devices	519

**TABLE 3 (Continued)**

<b>Questionnaire Item Number</b>	<b>Description</b>	<b>Page</b>
50	Worker Use of Personal Protective Devices Enforced by Corrective Measures	527
51	Corrective Measures to Enforce Proper Use of Protective Gear Which Involve Economic Penalties	537
52	Assessment of Economic Penalties in the Past Year as a Result of a Protective Device Use Policy	545
53	Existence of a Program to Regularly Conduct Safety Inspections	556
54	Written Reports Required for Safety Inspections	566
55	Results of Safety Inspections Routinely Made Available to Workers	573
56	Plants Which Have a Regular Preventive Maintenance Program	583
57	Regularly Scheduled Safety Training Programs for Workers	590
58	Existence of a Program to Regularly Assess Worker Awareness of Safety Rules	599
59	Plants Taking Corrective Measures for Safety Rule Violations	606
60	Corrective Measures for Safety Rule Violations Which Involve Economic Penalties	616
61	Assessment of Economic Penalties in the Past Year as a Result of a Safety Rule Enforcement Policy	624
62	Retention of Personnel Records on Terminated Employees	635
63	Recordkeeping on Employee Absenteeism	645
64	Unscheduled Absenteeism Rate	653
65	Turnover Rate Among Non-Administrative Permanent Employees	658
66	Industry Maintenance of the OSHA 200 Form	663



Data from industrial groups which were undersampled was useable when combined with results from other groups at the Major Industrial Group level, but was insufficient to present accurate analysis at the 2-digit SIC level. This was true for four 2-digit classifications:

SIC 40 Railroad Transportation  
 SIC 44 Water Transportation  
 SIC 46 Pipelines, Except Natural Gas  
 SIC 47 Transportation Services

Data from these SICs were incorporated into tables at the Major Industrial Group level only. This results in the slightly higher overall totals displayed in the Major Group tables throughout this volume when compared to the totals in the 2-digit SIC tables.

NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. 4

ESTIMATED NUMBER OF PLANTS AND EMPLOYEES IN PLANTS  
 IN THE 1981-1983 NATIONAL OCCUPATIONAL EXPOSURE SURVEY

PLANTS MAJOR GROUP	EMPLOYEES							
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	5563* (1575)	70* (67)	...	5633* (1557)	103682* (30828)	7009* (6680)	...	110692* (29333)
13	8597 (1933)	1019* (331)	46* (52)	9662 (2132)	208958 (38479)	173943* (58021)	31383* (35291)	414284 (101840)
15-17	94332 (2397)	4145 (543)	242* (135)	98791 (2409)	2098893 (18337)	737099 (106061)	236057* (100060)	3072049 (132323)
20-39	153243 (2452)	31754 (2031)	6270 (151)	191266 (3668)	4615695 (37880)	6380813 (381798)	8265320 (245684)	19261829 (551881)
40-49	53152 (2985)	5844 (1014)	468* (134)	59465 (3540)	1433869 (108715)	1153314 (220127)	573743 (106392)	3160926 (293218)
50-59	58392 (3826)	2659* (726)	...	61051 (3970)	1124374 (83219)	408827* (110771)	...	1533201 (142606)
70-79	73134 (3623)	2346 (334)	354* (149)	75835 (3590)	1393174 (69653)	464512 (63036)	339560* (124720)	2197247 (133603)
80	2839* (830)	2166 (282)	2061 (304)	7067 (851)	101644 (22701)	534485 (79054)	3022676 (359103)	3658805 (351918)
ALL	449252 (7439)	50003 (2507)	9442 (420)	508697 (8254)	11080290 (168266)	9860002 (481018)	12468739 (476914)	33409031 (762445)

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

ESTIMATED NUMBER OF PLANTS AND EMPLOYEES IN PLANTS  
IN THE 1981-1983 NATIONAL OCCUPATIONAL EXPOSURE SURVEY

SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	5563* (1575)	70* (67)	...	5633* (1557)	103682* (30828)	7009* (6680)	...	110692* (29333)
13	8597 (1933)	1019* (331)	46* (52)	9662 (2132)	208958 (38479)	173943* (58021)	31383* (35291)	414284 (101840)
15	24916 (1781)	1107 (197)	135* (100)	26158 (1839)	562888 (44936)	198218 (38188)	134799* (71218)	895905 (91612)
16	11284 (1432)	1119 (194)	107* (67)	12511 (1426)	284089 (46249)	207759 (44051)	101258* (53561)	593106 (86065)
17	58132 (1697)	1919 (433)	...	60051 (1740)	1251915 (31289)	331122* (83193)	...	1583038 (85352)
20	11412 (603)	3216 (458)	559 (121)	15187 (771)	388438 (4231)	673780 (106069)	491775 (104930)	1553993 (111185)
21	30* (43)	...	79* (56)	109* (65)	1866* (2685)	...	112133* (67572)	113999* (66861)
22	2932 (393)	1588 (158)	299* (80)	4819 (377)	106032 (5745)	347073 (29444)	261093* (94186)	714198 (90112)
23	12514 (828)	3102 (163)	242* (93)	15858 (843)	423904 (10003)	609922 (29811)	208437* (79559)	1242263 (81210)
24	10711 (682)	1148 (128)	104* (74)	11963 (709)	303646 (24224)	183585 (22297)	92355* (52501)	579586 (75029)
25	4164 (491)	1062 (133)	119* (75)	5345 (492)	139109 (19535)	256443 (35488)	122998* (62394)	518549 (73416)
26	4113 (781)	1569 (245)	214* (73)	5896 (777)	137654 (19252)	281476 (49372)	206864* (65220)	625994 (90546)
27	18118 (1009)	1873 (163)	316* (115)	20307 (977)	478131 (12884)	360902 (46979)	345750 (80151)	1184784 (108716)
28	6173 (428)	1160 (93)	380 (63)	7713 (397)	180739 (4348)	260831 (27986)	476341 (101388)	917910 (104738)
29	1011* (404)	293* (125)	101* (42)	1405* (457)	40980* (17325)	63255* (21394)	117545* (70259)	221781* (81654)
30	6711 (1152)	1537 (382)	224* (73)	8472 (1300)	225004 (27639)	294530* (81731)	233647* (72848)	753181 (109483)
31	931* (343)	569 (131)	25* (24)	1525 (372)	24888* (7207)	135459* (34334)	15664* (16901)	176011 (38675)
32	8798 (1157)	1012 (142)	184* (71)	9994 (1195)	237160 (16058)	208984 (30484)	128993* (49687)	575137 (45115)
33	4134 (468)	1468 (138)	337 (62)	5939 (478)	138468 (10157)	311081 (30513)	621499 (82456)	1071048 (83524)

## NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983)

## TABLE NO. 5 (CONTINUED)

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	18520 (1002)	3122 (143)	346 (83)	21988 (981)	554885 (8557)	596685 (23850)	351056* (100266)	1502626 (108576)
35	22650 (1097)	3405 (123)	784 (79)	26839 (1116)	606800 (8461)	661120 (16)	1112933 (147534)	2380853 (146969)
36	7104 (611)	2685 (87)	787 (170)	10576 (601)	230488 (11906)	552662 (175)	1182462 (196778)	1965612 (193562)
37	3973 (835)	1190 (102)	416 (92)	5579 (804)	127022 (16795)	239184 (28491)	1514008 (247233)	1880214 (240481)
38	2689 (520)	957 (86)	416* (139)	4062 (561)	104602 (13774)	194393 (19871)	460397* (129998)	759393 (138098)
39	6553 (659)	798* (1475)	338* (216)	7689 (1563)	165877 (13792)	149449* (273871)	209369* (120490)	524696* (259275)
41	4420 (1016)	510* (178)	...	4930 (1084)	117632 (25442)	81542* (35755)	...	199174 (49120)
42	20027 (2214)	1482 (319)	82* (54)	21590 (2297)	487803 (54570)	258822 (57060)	74830* (49333)	821454 (76595)
45	3241* (911)	590* (397)	147* (57)	3978* (1058)	77497* (20033)	109332* (75829)	264255* (77656)	451084 (101625)
48	14702 (2092)	902 (183)	34* (21)	15637 (2154)	425758 (85441)	176322 (39398)	70083* (43687)	672163 (109876)
49	8215 (1754)	1862* (567)	173* (99)	10250 (1964)	269370 (58035)	425470* (151076)	146565* (65566)	841404 (186134)
50	30349 (2465)	1802* (477)	...	32152 (2524)	630304 (70299)	283239* (79024)	...	913543 (119257)
51	9114 (1234)	237* (237)	...	9351 (1281)	185025 (40831)	27013* (27013)	...	212037* (55104)
55	18928 (3032)	620* (491)	...	19548 (3239)	309045 (54796)	98575* (80174)	...	407620* (110347)
72	20629 (2414)	675* (190)	13* (19)	21318 (2465)	380020 (49376)	82220* (24190)	10670* (15114)	472910 (62008)
73	16574 (1739)	1489 (226)	341* (141)	18404 (1686)	421447 (45518)	349713 (50710)	328890* (118571)	1100050 (122699)
75	26180 (3850)	59* (60)	...	26239 (3855)	413275 (61726)	8238* (8380)	...	421513 (62099)
76	9751 (2194)	123* (94)	...	9874 (2214)	178432 (29757)	24341* (19716)	...	202773 (40475)
80	2839* (830)	2166 (282)	2061 (304)	7067 (851)	101644 (22701)	534485 (79054)	3022676 (359103)	3658805 (351918)
ALL	446706 (6865)	49552 (781)	9425 (407)	505683 (7013)	11024481 (78742)	9773781 (114632)	12459734 (490043)	33257996 (492279)

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**NATIONAL OCCUPATIONAL EXPOSURE SURVEY  
(1981-1983)  
Analyses of Management Interview Responses**

**Section II - Facility Characteristics**

- years of operation
- number of shifts
- hours per shift
- male/female employment
- non-administrative workers
- labor unions

**NOES QUESTIONNAIRE ITEM NO. 8**  
**Years of Current Activity at Current Location**

**Intent**

The intent of this question was to determine the length of time that the current facility had been used for the same type of work.

This item was displayed on the questionnaire as:

8. Approximately how many years has this facility been involved in this activity?

\_\_ \_\_ Years (if "unknown" code "U K \_")

**Notes**

"Activity," as used in this question, is not limited to a single major industrial activity at the facility, but refers to all current industrial effort(s) at the facility.

The duration of current activity is based on use of the present site for that purpose, and represents the non-administrative industrial activity. For example, if the production area of the facility is 30 years old, but new management offices were built four years ago, the correct response to question 8 is 30.

Since the responses to this question are continuous variables, the data format differs from that of the discrete variables which was explained in the Introduction of this volume. The average number of years for facility size within Major Industrial Group or Standard Industrial Classification categories was calculated along with the standard error of that estimate, and both values displayed in the tabular format. Display of a percentage figure for the estimates is not applicable for continuous variable analysis as presented in this volume..

**Analysis**

One analysis of the responses to question 8 is presented.

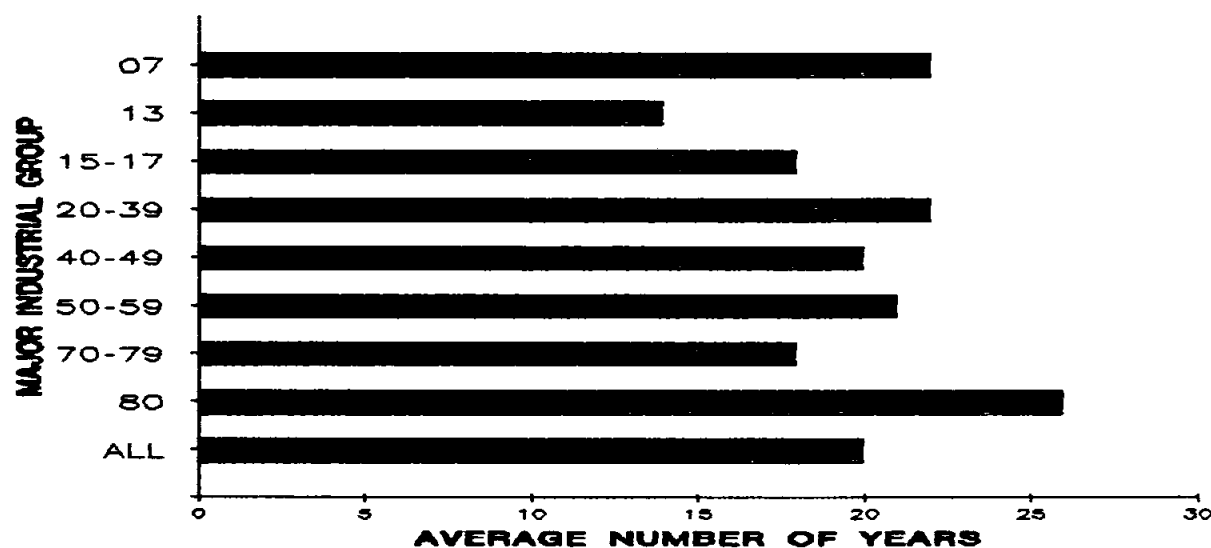
Response 8 - Approximate number of years this facility has been involved in the current activity

The estimates of the average number of years of current industrial activity at the present facilities by size within industrial classification category, and the standard error of those estimates are displayed in Figures II-1 and II-2, and Tables II-1 and II-2.

Figure II-1	Average number of years of similar industrial activity in the current facility (by major industrial group)
Figure II-2	Average number of years of similar industrial activity in the current facility (by 2-digit SIC)

<b>Table II-1</b>	<b>Average number of years that industrial facilities have been used for their current purpose (by major industrial group)</b>
<b>Table II-2</b>	<b>Average number of years that industrial facilities have been used for their current purpose (by 2-digit SIC)</b>

**FIGURE II - 1**  
**AVERAGE NUMBER OF YEARS OF SIMILAR INDUSTRIAL**  
**ACTIVITY IN THE CURRENT FACILITY**  
**(NOES 1981-1983)**



NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. II-1

AVERAGE NUMBER OF YEARS THAT INDUSTRIAL FACILITIES HAVE BEEN USED FOR THEIR CURRENT PURPOSE

MAJOR GROUP	PLANT SIZE			ALL
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	
07	22 (3)	3* (2)	...	22 (3)
13	14 (2)	16* (8)	25* (18)	14 (1)
15-17	18 (1)	20 (2)	33 (7)	18 (1)
20-39	20 (1)	26 (1)	36 (2)	22 (1)
40-49	19 (2)	22 (2)	39* (11)	20 (1)
50-59	20 (1)	33 (7)	...	21 (1)
70-79	18 (1)	20 (3)	14 (3)	18 (1)
80	15 (2)	24 (4)	44 (4)	26 (3)
ALL	19 (1)	25 (1)	37 (1)	20 (1)

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

## AVERAGE NUMBER OF YEARS THAT INDUSTRIAL FACILITIES HAVE BEEN USED FOR THEIR CURRENT PURPOSE

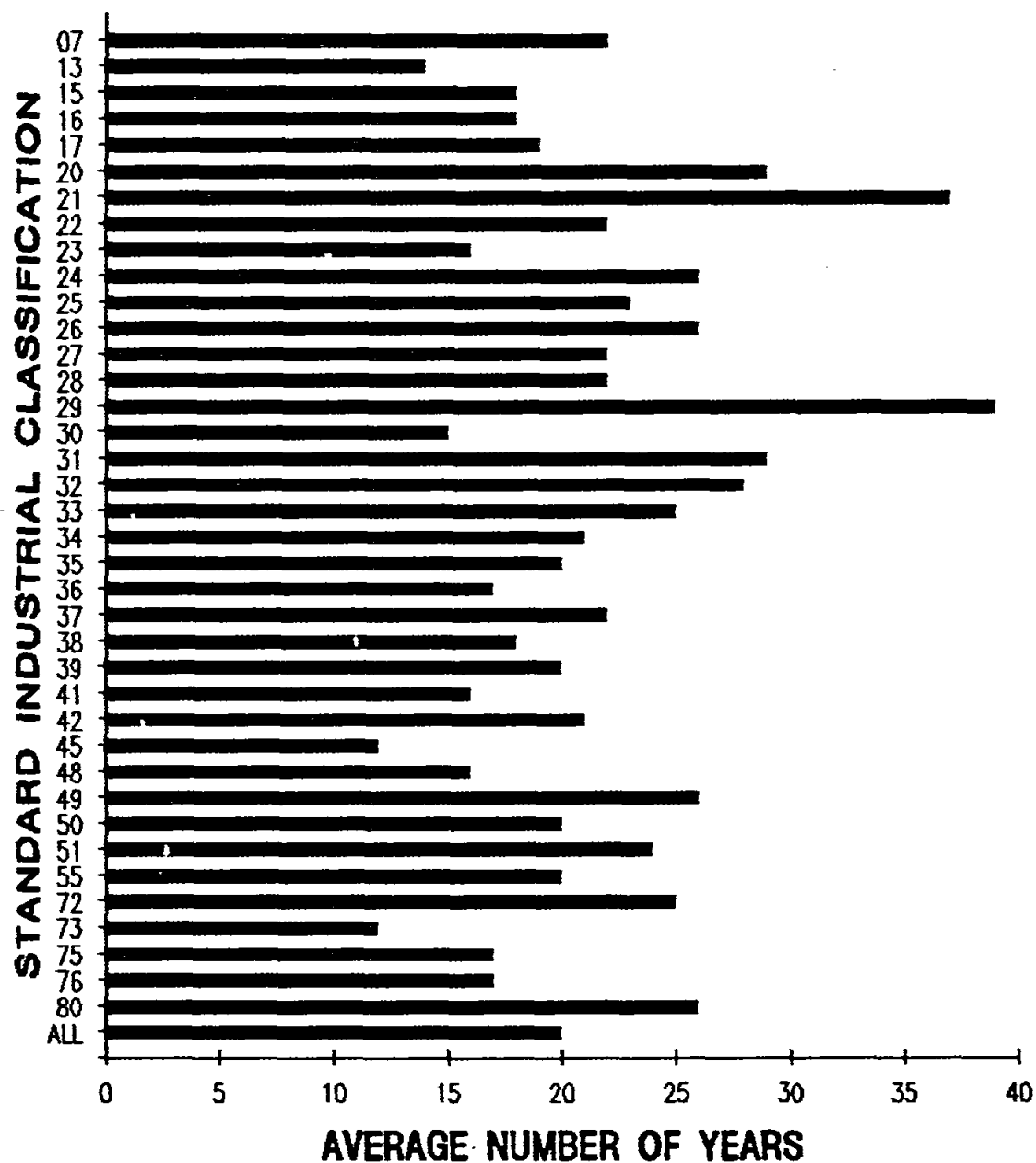
SIC CODE	PLANT SIZE			ALL
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	
07	22 (3)	3* (2)	...	22 (3)
13	14 (2)	16* (8)	25* (18)	14 (1)
15	18 (2)	18 (4)	38* (10)	18 (2)
16	17 (2)	22 (3)	26* (8)	18 (2)
17	19 (1)	19 (3)	...	19 (1)
20	28 (2)	33 (3)	37 (7)	29 (2)
21	15* (11)	...	46 (11)	37* (13)
22	19* (7)	25 (5)	40 (10)	22 (5)
23	14 (1)	20 (2)	44* (14)	16 (1)
24	25 (3)	32 (8)	45 (6)	26 (3)
25	21 (4)	32 (4)	38* (23)	23 (3)
26	23 (3)	27 (3)	54* (16)	26 (3)
27	22 (3)	26 (5)	36 (7)	22 (3)
28	20 (2)	31 (4)	31 (4)	22 (2)
29	42* (17)	21* (8)	57 (7)	39* (13)
30	14 (2)	17 (2)	29* (8)	15 (2)
31	23* (7)	38* (13)	28* (15)	29 (6)
32	26 (3)	41 (5)	45* (18)	28 (2)
33	23 (3)	26* (7)	49 (8)	25 (3)



SIC CODE	PLANT SIZE			ALL
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	
34	19 (1)	30 (2)	33 (5)	21 (1)
35	19 (1)	25 (3)	37 (6)	20 (1)
36	16 (2)	16 (2)	28 (3)	17 (2)
37	20* (6)	24 (3)	32 (2)	22 (4)
38	14 (3)	20 (5)	34* (11)	18 (3)
39	19 (4)	26* (7)	17* (20)	20 (3)
41	16 (3)	21* (10)	...	16 (3)
42	21 (3)	20 (3)	21* (5)	21 (3)
45	12* (3)	11* (6)	28 (6)	12 (3)
48	16 (2)	20* (5)	16* (10)	16 (2)
49	26 (4)	25 (4)	53* (25)	26 (3)
50	19 (2)	37 (9)	...	20 (2)
51	24 (2)	11* (11)	...	24 (2)
55	20 (3)	28* (16)	...	20 (3)
72	25 (3)	31* (8)	15* (10)	25 (3)
73	11 (1)	15 (3)	14 (4)	12 (1)
75	17 (2)	39* (28)	...	17 (2)
76	17 (2)	6* (3)	...	17 (2)
80	15 (2)	24 (4)	44 (4)	26 (3)
ALL	19 (1)	25 (1)	37 (1)	20 (1)

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE II - 2**  
**AVERAGE NUMBER OF YEARS OF SIMILAR INDUSTRIAL**  
**ACTIVITY IN THE CURRENT FACILITY**  
**(NOES 1981-1983)**



**NOES QUESTIONNAIRE ITEMS NO. 9 AND 10**  
**Number of Shifts Per Facility and Number of Hours Per Shift**

**Intent**

As part of the effort to precisely enumerate employees of the facility engaged in production activity, these questions were intended to ensure that observations of potential occupational exposure at the facility included all production shifts.

These items were displayed on the questionnaire as:

9. How many shifts do you have at present? \_

10. How many hours per shift:

\_ \_ (If irregular, code "99")

**Notes**

"Shift" was defined as the working period for employees of the facility, and may have been more or less than eight hours.

Only the number of production shifts was recorded. Work periods routinely devoted only to janitorial or maintenance operations were excluded.

The number of hours per shift was recorded for the facility at the time of survey, providing data across geographical and seasonal fluctuations. All shifts were included in this response. The values displayed for number of shifts and hours per shift are averages, and are rounded to the nearest whole number.

**Analysis**

Two analyses of the responses to questions 9 and 10 are presented.

(1) Response 9 - Number of shifts per facility

The estimates of the average number of shifts per facility are displayed in Figures II-3 and II-4 and the first four columns of Tables II-3 and II-4.

Figure II-3	Average number of shifts per facility (by major industrial group)
Figure II-4	Average number of shifts per facility (by 2-digit SIC)
Table II-3	Average number of shifts per facility and hours per shift (by major industrial group)
Table II-4	Average number of shifts per facility and hours per shift (by 2-digit SIC)

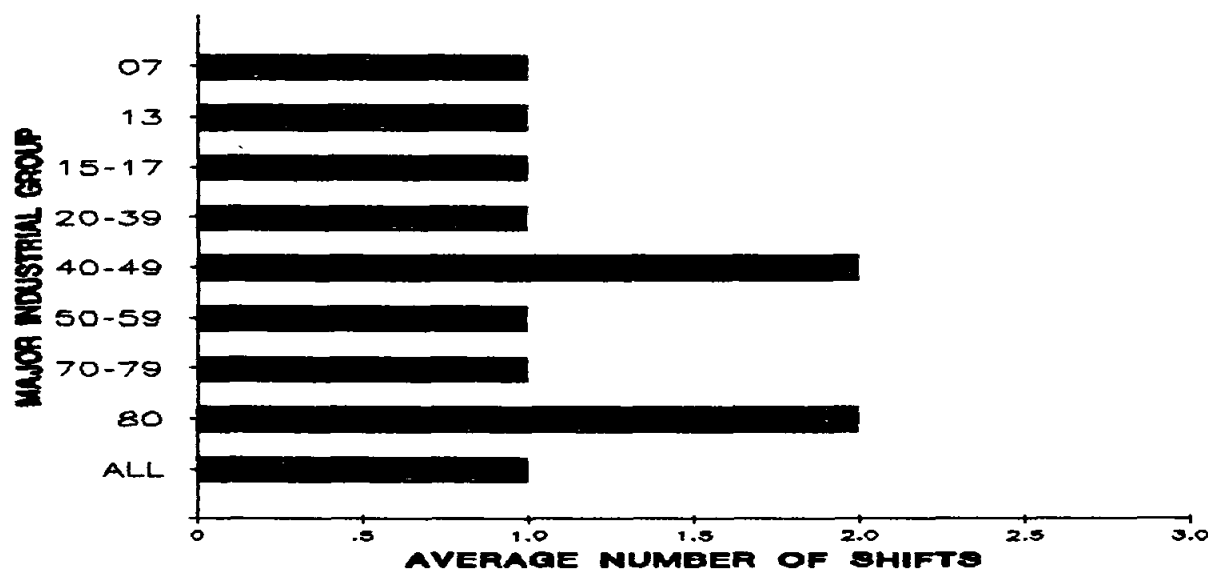
**(2) Response 10 - Number of hours per shift**

The estimated average hours per shift are displayed in Figures II-5 and II-6, and the second four columns of Tables II-3 and II-4.

**Figure II-5**      **Average number of hours per shift**  
                          **(by major industrial group)**

**Figure II-6**      **Average number of hours per shift**  
                          **(by 2-digit SIC)**

**FIGURE II - 3**  
**AVERAGE NUMBER OF SHIFTS PER FACILITY**  
**(NOES 1981-1983)**



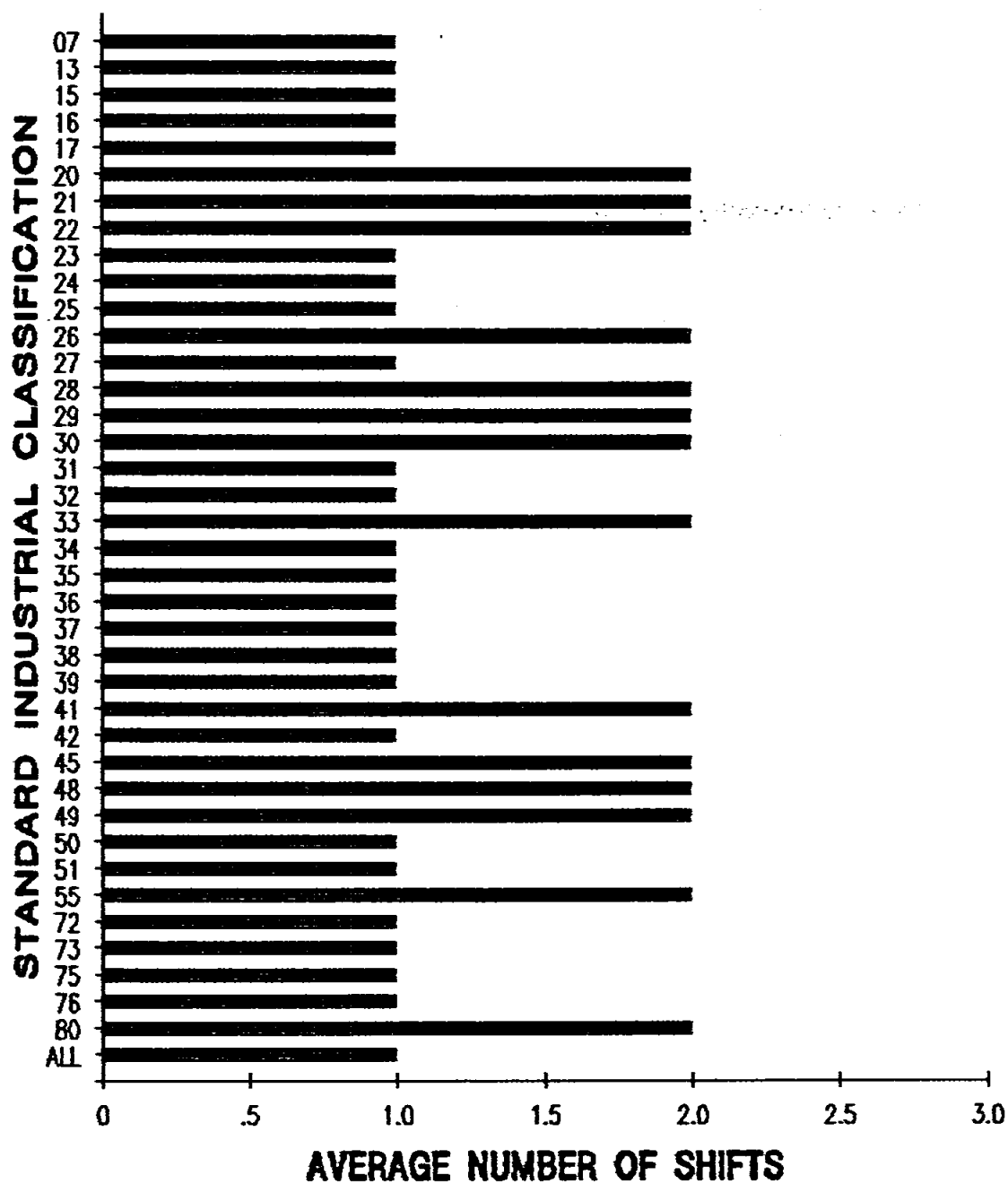
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. II-3

**AVERAGE NUMBER OF SHIFTS PER FACILITY AND HOURS PER SHIFT**

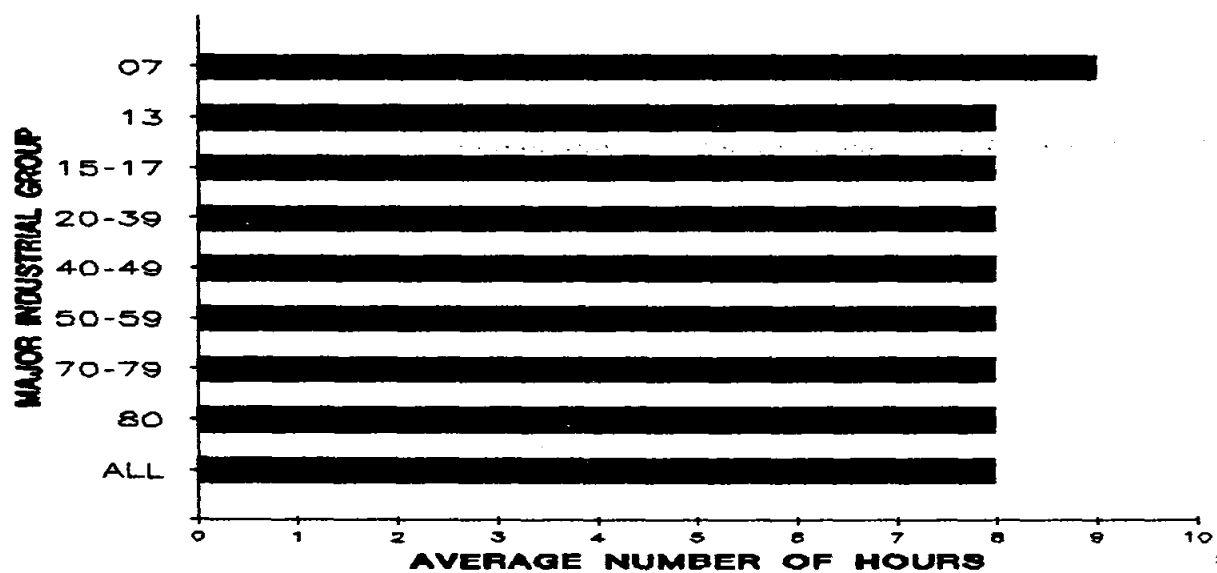
MAJOR GROUP	AVERAGE NUMBER OF SHIFTS PER FACILITY				AVERAGE NUMBER OF HOURS PER SHIFT			
	PLANT SIZE				PLANT SIZE			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	1 ( $<.25$ )	1* (1)	...	1 ( $<.25$ )	9 ( $<.5$ )	...	...	9 ( $<.5$ )
13	1 ( $<.25$ )	2 ( $<.5$ )	3* (2)	1 ( $<.25$ )	8 ( $<.5$ )	8 ( $<.5$ )	8* (6)	8 ( $<.5$ )
15-17	1 ( $<.25$ )	1 ( $<.25$ )	1 ( $<.25$ )	1 ( $<.25$ )	8 ( $<.5$ )	8 ( $<.5$ )	8 ( $<.5$ )	8 ( $<.5$ )
20-39	1 ( $<.25$ )	2 ( $<.5$ )	3 ( $<.5$ )	1 ( $<.25$ )	8 ( $<.5$ )	8 ( $<.5$ )	8 ( $<.5$ )	8 ( $<.5$ )
40-49	2 ( $<.5$ )	2 ( $<.5$ )	3 ( $<.5$ )	2 ( $<.5$ )	8 ( $<.5$ )	8 ( $<.5$ )	8 ( $<.5$ )	8 ( $<.5$ )
50-59	1 ( $<.25$ )	2 ( $<.5$ )	...	1 ( $<.25$ )	8 ( $<.5$ )	8 ( $<.5$ )	...	8 ( $<.5$ )
70-79	1 ( $<.25$ )	2 ( $<.5$ )	2 ( $<.5$ )	1 ( $<.25$ )	8 ( $<.5$ )	8 ( $<.5$ )	8 ( $<.5$ )	8 ( $<.5$ )
80	2 ( $<.5$ )	3 ( $<.5$ )	3 ( $<.5$ )	2 ( $<.5$ )	8 ( $<.5$ )	8 ( $<.5$ )	8 ( $<.5$ )	8 ( $<.5$ )
ALL	1 ( $<.25$ )	2 ( $<.5$ )	3 ( $<.5$ )	1 ( $<.25$ )	8 ( $<.5$ )	8 ( $<.5$ )	8 ( $<.5$ )	8 ( $<.5$ )

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE II - 4**  
**AVERAGE NUMBER OF SHIFTS PER FACILITY**  
 (NOES 1981-1983)



**FIGURE II - 5**  
**AVERAGE NUMBER OF HOURS PER SHIFT**  
**(NOES 1981-1988)**



## AVERAGE NUMBER OF SHIFTS PER FACILITY AND HOURS PER SHIFT

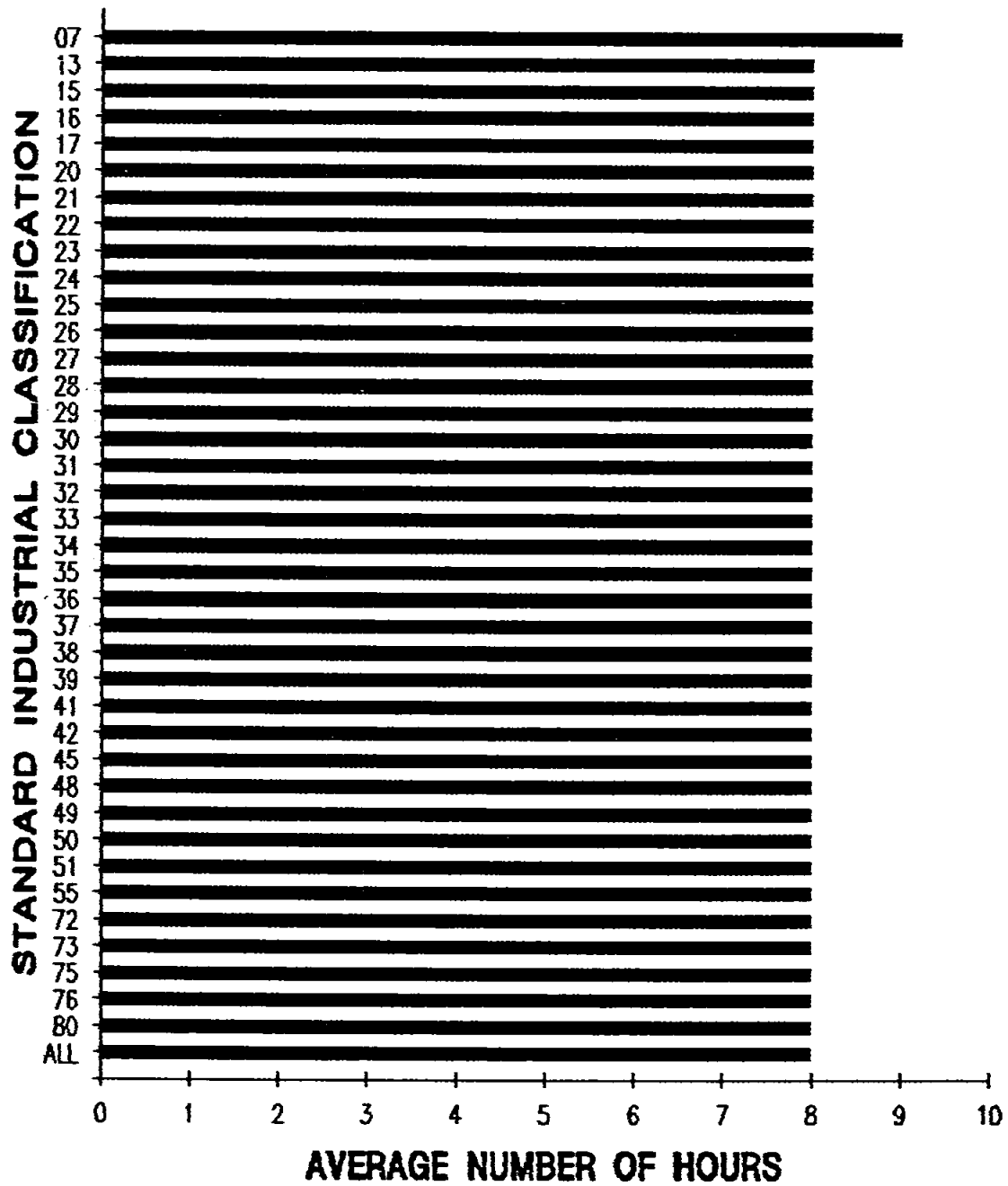
SIC CODE	AVERAGE NUMBER OF SHIFTS PER FACILITY				AVERAGE NUMBER OF HOURS PER SHIFT			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	<sup>1</sup> ( $<.25$ )	<sup>1*</sup> (1)	...	<sup>1</sup> ( $<.25$ )	<sup>9</sup> ( $<.5$ )	...	...	<sup>9</sup> ( $<.5$ )
13	<sup>1</sup> ( $<.25$ )	<sup>2</sup> ( $<.5$ )	<sup>3*</sup> (2)	<sup>1</sup> ( $<.25$ )	<sup>8</sup> ( $<.5$ )	<sup>8</sup> ( $<.5$ )	<sup>8*</sup> (6)	<sup>8</sup> ( $<.5$ )
15	<sup>1</sup> ( $<.25$ )	<sup>1</sup> ( $<.25$ )	<sup>1</sup> ( $<.25$ )	<sup>1</sup> ( $<.25$ )	<sup>8</sup> ( $<.5$ )	<sup>8</sup> ( $<.5$ )	<sup>8</sup> ( $<.5$ )	<sup>8</sup> ( $<.5$ )
16	<sup>1</sup> ( $<.25$ )	<sup>1</sup> ( $<.25$ )	<sup>1</sup> ( $<.25$ )	<sup>1</sup> ( $<.25$ )	<sup>8</sup> ( $<.5$ )	<sup>8</sup> ( $<.5$ )	<sup>9</sup> (1)	<sup>8</sup> ( $<.5$ )
17	<sup>1</sup> ( $<.25$ )	<sup>1</sup> ( $<.25$ )	...	<sup>1</sup> ( $<.25$ )	<sup>8</sup> ( $<.5$ )	<sup>8</sup> ( $<.5$ )	...	<sup>8</sup> ( $<.5$ )
20	<sup>2</sup> ( $<.5$ )	<sup>2</sup> ( $<.5$ )	<sup>3</sup> ( $<.5$ )	<sup>2</sup> ( $<.5$ )	<sup>8</sup> ( $<.5$ )	<sup>8</sup> ( $<.5$ )	<sup>8</sup> ( $<.5$ )	<sup>8</sup> ( $<.5$ )
21	<sup>1*</sup> (1)	...	<sup>2</sup> ( $<.5$ )	<sup>2</sup> ( $<.5$ )	<sup>8*</sup> (6)	...	<sup>8*</sup> (4)	<sup>8</sup> ( $<.5$ )
22	<sup>2</sup> ( $<.5$ )	<sup>3</sup> ( $<.5$ )	<sup>3</sup> ( $<.5$ )	<sup>2</sup> ( $<.5$ )	<sup>8</sup> ( $<.5$ )	<sup>8</sup> ( $<.5$ )	<sup>8</sup> ( $<.5$ )	<sup>8</sup> ( $<.5$ )
23	<sup>1</sup> ( $<.25$ )	<sup>1</sup> ( $<.25$ )	<sup>1*</sup> (0)	<sup>1</sup> ( $<.25$ )	<sup>8</sup> ( $<.5$ )	<sup>8</sup> ( $<.5$ )	<sup>8</sup> ( $<.5$ )	<sup>8</sup> ( $<.5$ )
24	<sup>1</sup> ( $<.25$ )	<sup>1</sup> ( $<.25$ )	<sup>1*</sup> (2)	<sup>1</sup> ( $<.25$ )	<sup>8</sup> ( $<.5$ )	<sup>8</sup> ( $<.5$ )	<sup>8*</sup> (4)	<sup>8</sup> ( $<.5$ )
25	<sup>1</sup> ( $<.25$ )	<sup>1</sup> ( $<.25$ )	<sup>2*</sup> (1)	<sup>1</sup> ( $<.25$ )	<sup>8</sup> ( $<.5$ )	<sup>8</sup> ( $<.5$ )	<sup>8</sup> (1)	<sup>8</sup> ( $<.5$ )
26	<sup>1</sup> ( $<.25$ )	<sup>3</sup> ( $<.5$ )	<sup>3</sup> ( $<.5$ )	<sup>2</sup> ( $<.5$ )	<sup>8</sup> ( $<.5$ )	<sup>8</sup> ( $<.5$ )	<sup>8</sup> ( $<.5$ )	<sup>8</sup> ( $<.5$ )
27	<sup>1</sup> ( $<.25$ )	<sup>2</sup> ( $<.5$ )	<sup>3</sup> ( $<.5$ )	<sup>1</sup> ( $<.25$ )	<sup>8</sup> ( $<.5$ )	<sup>8</sup> ( $<.5$ )	<sup>8</sup> ( $<.5$ )	<sup>8</sup> ( $<.5$ )
28	<sup>1</sup> ( $<.25$ )	<sup>3</sup> ( $<.5$ )	<sup>3</sup> ( $<.5$ )	<sup>2</sup> ( $<.5$ )	<sup>8</sup> ( $<.5$ )	<sup>8</sup> ( $<.5$ )	<sup>8</sup> ( $<.5$ )	<sup>8</sup> ( $<.5$ )
29	<sup>2</sup> ( $<.5$ )	<sup>3</sup> ( $<.5$ )	<sup>3</sup> ( $<.5$ )	<sup>2</sup> ( $<.5$ )	<sup>8</sup> (1)	<sup>8</sup> ( $<.5$ )	<sup>8</sup> (2)	<sup>8</sup> ( $<.5$ )
30	<sup>2</sup> ( $<.5$ )	<sup>3</sup> ( $<.5$ )	<sup>3</sup> ( $<.5$ )	<sup>2</sup> ( $<.5$ )	<sup>8</sup> ( $<.5$ )	<sup>8</sup> ( $<.5$ )	<sup>8</sup> ( $<.5$ )	<sup>8</sup> ( $<.5$ )
31	<sup>1</sup> ( $<.25$ )	<sup>2</sup> ( $<.5$ )	<sup>1*</sup> (1)	<sup>1</sup> ( $<.25$ )	<sup>8</sup> ( $<.5$ )	<sup>8</sup> ( $<.5$ )	<sup>8*</sup> (4)	<sup>8</sup> ( $<.5$ )
32	<sup>1</sup> ( $<.25$ )	<sup>2</sup> ( $<.5$ )	<sup>4</sup> ( $<.5$ )	<sup>1</sup> ( $<.25$ )	<sup>8</sup> ( $<.5$ )	<sup>8</sup> ( $<.5$ )	<sup>8</sup> ( $<.5$ )	<sup>8</sup> ( $<.5$ )
33	<sup>2</sup> ( $<.5$ )	<sup>2</sup> ( $<.5$ )	<sup>3</sup> ( $<.5$ )	<sup>2</sup> ( $<.5$ )	<sup>8</sup> ( $<.5$ )	<sup>8</sup> ( $<.5$ )	<sup>8</sup> ( $<.5$ )	<sup>8</sup> ( $<.5$ )



SIC CODE	AVERAGE NUMBER OF SHIFTS PER FACILITY PLANT SIZE				AVERAGE NUMBER OF HOURS PER SHIFT PLANT SIZE			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	1 ( $<.25$ )	2 ( $<.5$ )	2 ( $<.5$ )	1 ( $<.25$ )	8 ( $<.5$ )	8 ( $<.5$ )	8 ( $<.5$ )	8 ( $<.5$ )
35	1 ( $<.25$ )	2 ( $<.5$ )	3 ( $<.5$ )	1 ( $<.25$ )	8 ( $<.5$ )	8 ( $<.5$ )	8 ( $<.5$ )	8 ( $<.5$ )
36	1 ( $<.25$ )	2 ( $<.5$ )	3 ( $<.5$ )	1 ( $<.25$ )	8 ( $<.5$ )	8 ( $<.5$ )	8 ( $<.5$ )	8 ( $<.5$ )
37	1 ( $<.25$ )	2 ( $<.5$ )	2 ( $<.5$ )	1 ( $<.25$ )	8 ( $<.5$ )	8 ( $<.5$ )	8 ( $<.5$ )	8 ( $<.5$ )
38	1 ( $<.25$ )	1 ( $<.25$ )	3 ( $<.5$ )	1 ( $<.25$ )	8 ( $<.5$ )	8 ( $<.5$ )	8 ( $<.5$ )	8 ( $<.5$ )
39	1 ( $<.25$ )	2 ( $<.5$ )	1* (1)	1 ( $<.25$ )	8 ( $<.5$ )	8 ( $<.5$ )	8* (3)	8 ( $<.5$ )
41	2 ( $<.5$ )	2 ( $<.5$ )	...	2 ( $<.5$ )	8 ( $<.5$ )	8 ( $<.5$ )	...	8 ( $<.5$ )
42	1 ( $<.25$ )	2 ( $<.5$ )	2* (1)	1 ( $<.25$ )	8 ( $<.5$ )	8 ( $<.5$ )	8 ( $<.5$ )	8 ( $<.5$ )
45	2 ( $<.5$ )	3* (1)	3 ( $<.5$ )	2 ( $<.5$ )	8 ( $<.5$ )	8* (4)	8 ( $<.5$ )	8 ( $<.5$ )
48	2 ( $<.5$ )	2 ( $<.5$ )	3* (1)	2 ( $<.5$ )	8 ( $<.5$ )	9 (1)	...	8 ( $<.5$ )
49	1 ( $<.25$ )	3 ( $<.5$ )	3 ( $<.5$ )	2 ( $<.5$ )	8 ( $<.5$ )	8 ( $<.5$ )	8 ( $<.5$ )	8 ( $<.5$ )
50	1 ( $<.25$ )	2 ( $<.5$ )	...	1 ( $<.25$ )	8 ( $<.5$ )	8 ( $<.5$ )	...	8 ( $<.5$ )
51	1 ( $<.25$ )	2* (2)	...	1 ( $<.25$ )	8 ( $<.5$ )	...	...	8 ( $<.5$ )
55	2 ( $<.5$ )	2* (1)	...	2 ( $<.5$ )	8 ( $<.5$ )	8* (6)	...	8 ( $<.5$ )
72	1 ( $<.25$ )	1 ( $<.25$ )	2* (1)	1 ( $<.25$ )	8 ( $<.5$ )	8 (1)	...	8 ( $<.5$ )
73	1 ( $<.25$ )	2 ( $<.5$ )	2 ( $<.5$ )	1 ( $<.25$ )	8 ( $<.5$ )	7 ( $<.5$ )	8 ( $<.5$ )	8 ( $<.5$ )
75	1 ( $<.25$ )	1* (1)	...	1 ( $<.25$ )	8 ( $<.5$ )	8* (6)	...	8 ( $<.5$ )
76	1 ( $<.25$ )	1* (1)	...	1 ( $<.25$ )	8 ( $<.5$ )	8* (4)	...	8 ( $<.5$ )
80	2 ( $<.5$ )	3 ( $<.5$ )	3 ( $<.5$ )	2 ( $<.5$ )	8 ( $<.5$ )	8 ( $<.5$ )	8 ( $<.5$ )	8 ( $<.5$ )
ALL	1 ( $<.25$ )	2 ( $<.5$ )	3 ( $<.5$ )	1 ( $<.25$ )	8 ( $<.5$ )	8 ( $<.5$ )	8 ( $<.5$ )	8 ( $<.5$ )

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE II - 6**  
**AVERAGE NUMBER OF HOURS PER SHIFT**  
 (NOES 1981-1983)





- (2) Response 11 (male or female) - Estimated number and percent of male and female employees

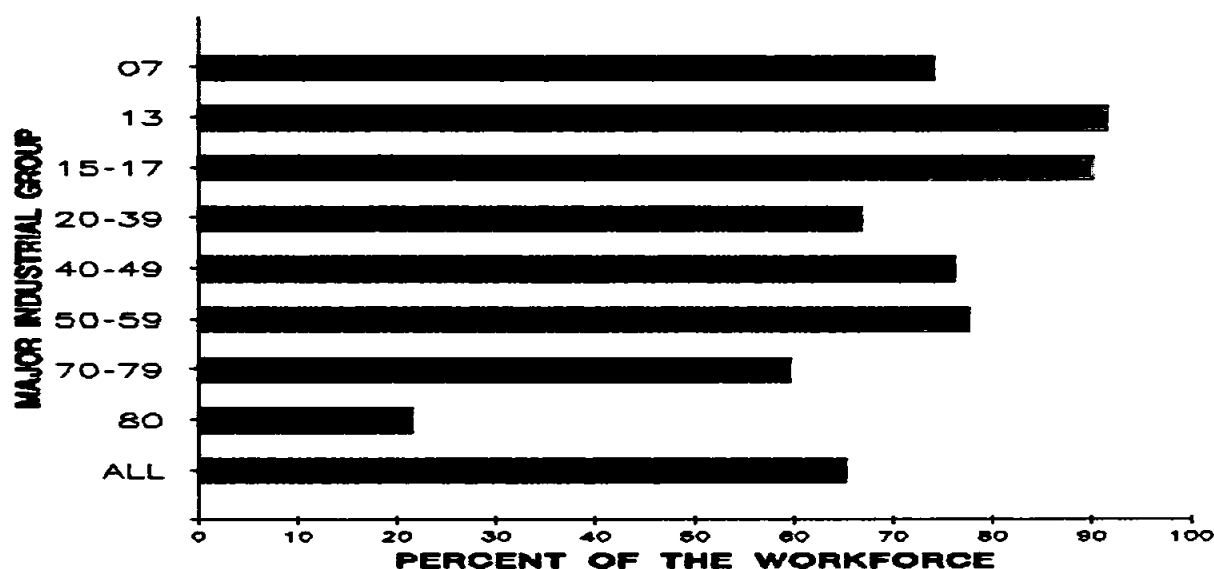
The estimates of the number and percent of male and female employees in the workplace are presented in Figure II-9 and Table II-5 and II-6.

Figure II-9	Male and female proportions of the workforce by plant size
Table II-5	Estimated number and percent of male and female workers by industry and plant size (by major industrial group)
Table II-6	Estimated number and percent of male and female workers by industry and plant size (by 2-digit SIC)

Please note that estimates of the total number of workers and industrial facilities based on WOES survey data were presented as part of the survey documentation in Section I of this volume.



**FIGURE II - 7**  
**PROPORTION OF THE WORKFORCE WHICH IS MALE**  
**(NOES 1981-1983)**



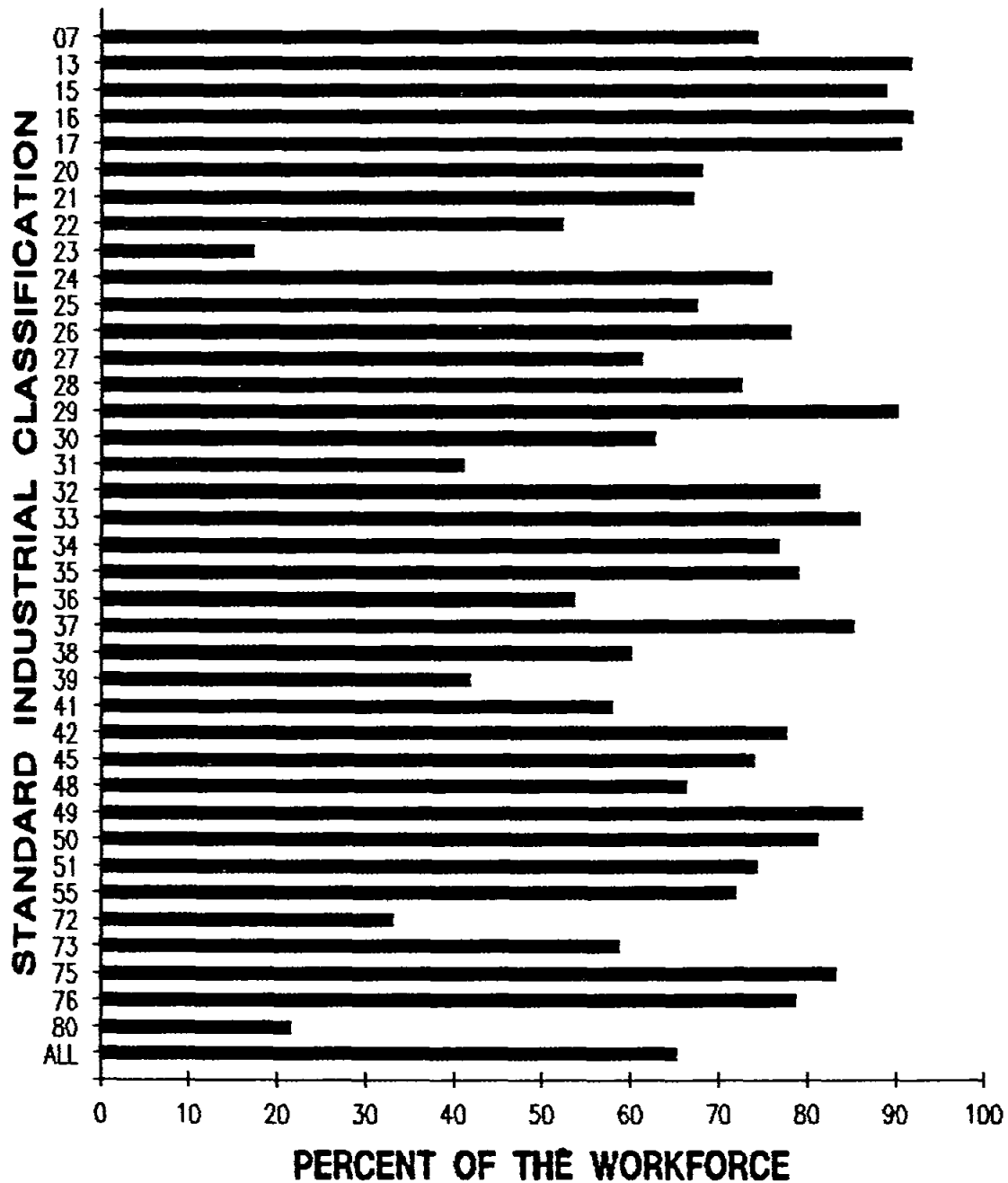
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. II-5

ESTIMATED NUMBER AND PERCENT OF MALE AND FEMALE WORKERS BY INDUSTRY AND PLANT SIZE

MAJOR GROUP	MALE WORKERS				FEMALE WORKERS			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	75893* (24805) 73.2%	6448* (6146) 92.0%	...	82342* (23419) 74.4%	27789* (7432) 26.8%	561* (534) 8.0%	...	28350* (7338) 25.6%
13	190637 (35797) 91.2%	159489* (53000) 91.7%	30598* (34408) 97.5%	380724 (93551) 91.9%	18321 (3549) 8.8%	14454* (6932) 8.3%	785* (882) 2.5%	33559* (9085) 8.1%
15-17	1885750 (17583) 89.8%	676554 (95448) 91.8%	215389* (94307) 91.2%	2777692 (123568) 90.4%	213143 (9617) 10.2%	60546 (11638) 8.2%	20668* (11911) 8.8%	294357 (14814) 9.6%
20-39	3183868 (47227) 69.0%	3894182 (216185) 61.0%	5844398 (268540) 70.7%	12922449 (435270) 67.1%	1431826 (30350) 31.0%	2486631 (184883) 39.0%	2420922 (81166) 29.3%	6339379 (207579) 32.9%
40-49	1112590 (82021) 77.6%	900013 (184534) 78.0%	406020 (72782) 70.8%	2418622 (231166) 76.5%	321279 (39534) 22.4%	253301 (48473) 22.0%	167724* (43187) 29.2%	742304 (81383) 23.5%
50-59	879952 (62478) 78.3%	314570* (85719) 76.9%	...	1194521 (108348) 77.9%	244422 (27640) 21.7%	94257* (30014) 23.1%	...	338679 (41586) 22.1%
70-79	876110 (43213) 62.9%	233515 (34181) 50.3%	207454* (84586) 61.1%	1317079 (82655) 59.9%	517064 (52877) 37.1%	230997 (34293) 49.7%	132107* (45322) 38.9%	880168 (72322) 40.1%
80	19616* (5325) 19.3%	100498 (16138) 18.8%	676106 (68366) 22.4%	796220 (66742) 21.8%	82028 (18215) 80.7%	433987 (67304) 81.2%	2346570 (295061) 77.6%	2862585 (289982) 78.2%
ALL	8224417 (130242) 74.2%	6285269 (318625) 63.7%	7379965 (315147) 59.2%	21889651 (538973) 65.5%	2855873 (80846) 25.8%	3574733 (208139) 36.3%	5088774 (312587) 40.8%	11519380 (375657) 34.5%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE II - 8**  
**PROPORTION OF THE WORKFORCE WHICH IS MALE**  
 (NOES 1981-1983)



## ESTIMATED NUMBER AND PERCENT OF MALE AND FEMALE WORKERS BY INDUSTRY AND PLANT SIZE

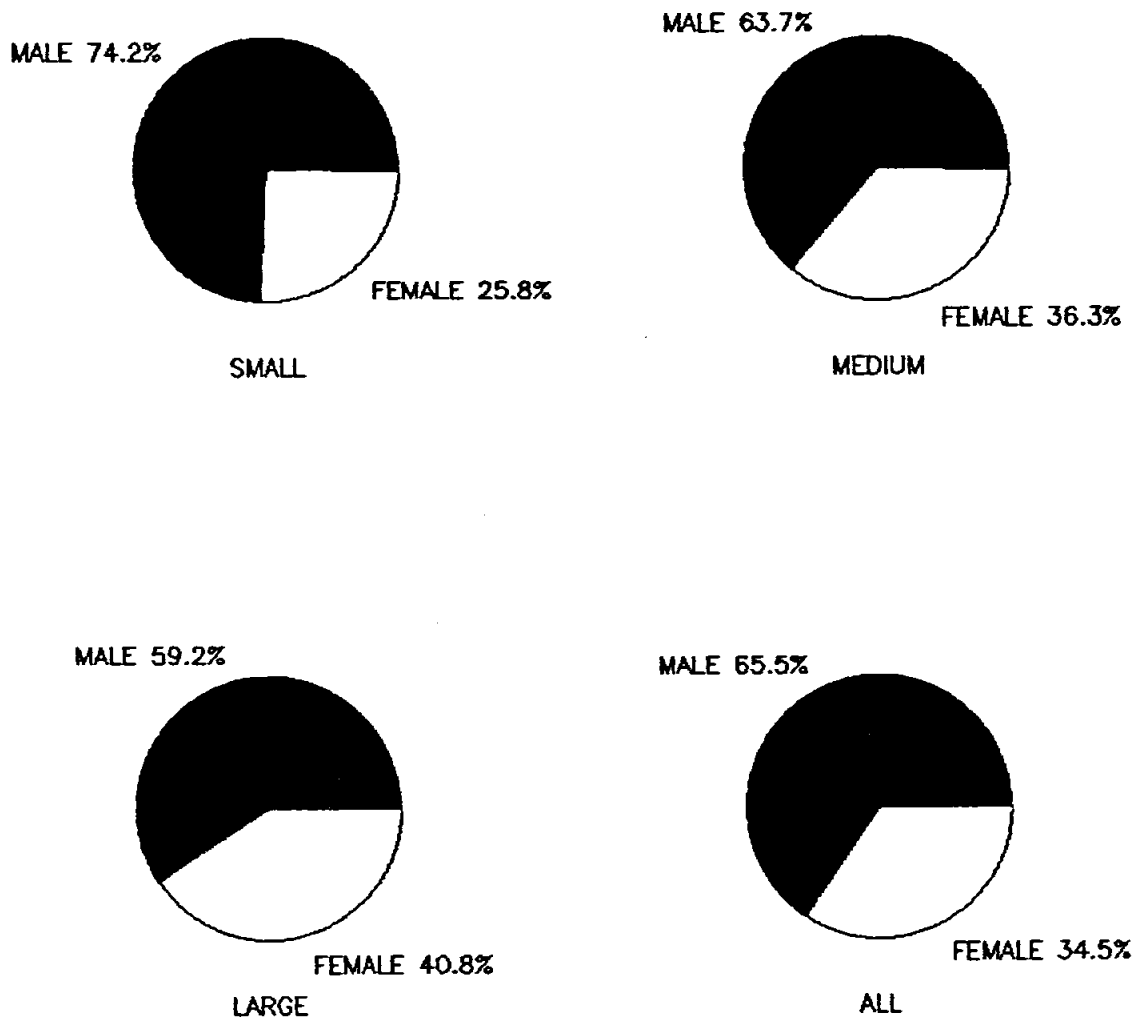
SIC CODE	MALE WORKERS PLANT SIZE				FEMALE WORKERS PLANT SIZE			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	75893* (24805) 73.2%	6448* (6146) 92.0%	---	82342* (23419) 74.4%	27789* (7432) 26.8%	561* (534) 8.0%	---	28350* (7338) 25.6%
13	190637 (35797) 91.2%	159489* (53000) 91.7%	30598* (34408) 97.5%	380724 (93551) 91.9%	18321 (3549) 8.8%	14454* (6932) 8.3%	785* (882) 2.5%	33559* (9085) 8.1%
15	496595 (39905) 88.2%	179324 (35842) 90.5%	122573* (66727) 90.9%	798492 (83536) 89.1%	66293 (7442) 11.8%	18894 (3175) 9.5%	12226* (6862) 9.1%	97413 (10590) 10.9%
16	260228 (42818) 91.6%	192513 (39826) 92.7%	92816* (50869) 91.7%	545558 (79896) 92.0%	23861 (4818) 8.4%	15246* (5175) 7.3%	8442* (8901) 8.3%	47548* (12131) 8.0%
17	1128926 (28580) 90.2%	304716 (75025) 92.0%	---	1433642 (75830) 90.6%	122989 (6499) 9.8%	26406* (8993) 8.0%	---	149395 (12538) 9.4%
20	298171 (12265) 76.8%	451491 (68780) 67.0%	309521 (70863) 62.9%	1059183 (75505) 68.2%	90267 (10908) 23.2%	222290 (42632) 33.0%	182254 (39206) 37.1%	494810 (50049) 31.8%
21	1351* (1916) 72.4%	---	75254* (44782) 67.1%	76605* (44254) 67.2%	515* (770) 27.6%	---	36879* (22904) 32.9%	37394* (22719) 32.8%
22	42111 (4031) 39.7%	196475 (19809) 56.6%	135433* (49773) 51.9%	374019 (42847) 52.4%	63921 (5309) 60.3%	150598 (15949) 43.4%	125660* (45306) 48.1%	340179 (50162) 47.6%
23	86409 (10576) 20.4%	84361 (10241) 13.8%	45308* (20709) 21.7%	216078 (23768) 17.4%	337495 (13069) 79.6%	525561 (26472) 86.2%	163129* (60187) 78.3%	1026186 (63535) 82.6%
24	251585 (21310) 82.9%	133739 (16933) 72.8%	55658* (26743) 60.3%	440982 (42955) 76.1%	52062 (7229) 17.1%	49846 (8713) 27.2%	36697* (28119) 39.7%	138604* (37828) 23.9%
25	102510 (15684) 73.7%	170582 (22849) 66.5%	77462* (36867) 63.0%	350554 (44139) 67.6%	36599 (8770) 26.3%	85860* (22314) 33.5%	45536* (27090) 37.0%	167995 (38762) 32.4%
26	104319 (15076) 75.8%	210500 (39629) 74.8%	174404* (53749) 84.3%	489222 (73358) 78.2%	33335 (6498) 24.2%	70976 (15706) 25.2%	32461* (12326) 15.7%	136771 (22532) 21.8%
27	299203 (18111) 62.6%	225481 (31233) 62.5%	203353 (46988) 58.8%	728036 (63294) 61.4%	178929 (11171) 37.4%	135421 (19869) 37.5%	142397* (40765) 41.2%	456747 (53516) 38.6%
28	142832 (4906) 79.0%	182142 (20287) 69.8%	342128* (89825) 71.8%	667102 (95739) 72.7%	37906 (4292) 21.0%	78689 (15021) 30.2%	134213* (33617) 28.2%	250808 (35750) 27.3%
29	37075* (15812) 90.5%	55906* (18888) 88.4%	107468* (62942) 91.4%	200450* (73302) 90.4%	3905* (1755) 9.5%	7349* (2740) 11.6%	10077* (8090) 8.6%	21331* (9049) 9.6%
30	138809 (18903) 61.7%	150875* (39705) 51.2%	183902* (59890) 78.7%	473586 (66904) 62.9%	86195 (13185) 38.3%	143654* (44954) 48.8%	49745* (17057) 21.3%	279594 (52890) 37.1%
31	13669* (4878) 54.9%	49159* (13239) 36.3%	9905* (9597) 63.2%	72733 (14896) 41.3%	11218* (4421) 45.1%	86300* (24923) 63.7%	5760* (7705) 36.8%	103278* (25961) 58.7%
32	203407 (13885) 85.8%	165155 (24175) 79.0%	100076* (38121) 77.6%	468638 (35863) 81.5%	33753 (5475) 14.2%	43828* (11813) 21.0%	28917* (12011) 22.4%	106499 (15122) 18.5%
33	121071 (10376) 87.4%	236364 (30732) 76.0%	565131 (76430) 90.9%	922566 (80451) 86.1%	17397 (4338) 12.6%	74717 (17519) 24.0%	56368 (11671) 9.1%	148482 (20135) 13.9%



SIC CODE	MALE WORKERS PLANT SIZE				FEMALE WORKERS PLANT SIZE			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	443759 (13805) 80.0%	439953 (27520) 73.7%	272283* (72627) 77.6%	1155995 (83265) 76.9%	111126 (10187) 20.0%	156732 (19934) 26.3%	78773* (32323) 22.4%	346631 (43421) 23.1%
35	519101 (9700) 85.5%	506315 (16822) 76.6%	861405 (120850) 77.4%	1886821 (115023) 79.2%	87699 (5739) 14.5%	154805 (16818) 23.4%	251528 (33657) 22.6%	494032 (42699) 20.8%
36	114882 (10864) 49.8%	269531 (21480) 48.8%	671738 (127438) 56.8%	1056150 (118233) 53.7%	115607 (9730) 50.2%	283131 (21460) 51.2%	510725 (76075) 43.2%	909463 (85682) 46.3%
37	112940 (15261) 88.9%	180758 (19687) 75.6%	1312836 (233146) 86.7%	1606534 (223581) 85.4%	14082 (2843) 11.1%	58426* (16362) 24.4%	201172 (29355) 13.3%	273680 (33547) 14.6%
38	52743 (8604) 50.4%	116373 (14180) 59.9%	287825* (85654) 62.5%	456941 (90158) 60.2%	51859 (7658) 49.6%	78020 (9359) 40.1%	172572* (61743) 37.5%	302452 (64896) 39.8%
39	97920 (12674) 59.0%	69022* (127003) 46.2%	53310* (23622) 25.5%	220253* (121870) 42.0%	67957 (8675) 41.0%	80427* (148885) 53.8%	156060* (98903) 74.5%	304443* (151055) 58.0%
41	78288 (16530) 66.6%	37489* (15310) 46.0%	...	115777 (26008) 58.1%	39344* (13576) 33.4%	44053* (25721) 54.0%	...	83397* (30925) 41.9%
42	405075 (42914) 83.0%	186171 (39051) 71.9%	47967* (26242) 64.1%	639213 (56815) 77.8%	82728 (14320) 17.0%	72651* (20519) 28.1%	26863* (25141) 35.9%	182242 (28459) 22.2%
45	58657 (13781) 75.7%	91991* (63299) 84.1%	183875* (49547) 69.6%	334523 (71748) 74.2%	18839* (8285) 24.3%	17341* (13317) 15.9%	80380* (31115) 30.4%	116560* (34777) 25.8%
48	294504 (62873) 69.2%	108445 (24370) 61.5%	43064* (27678) 61.4%	446013 (72906) 66.4%	131254 (25759) 30.8%	67876* (19322) 38.5%	27019* (17719) 38.6%	226150 (41209) 33.6%
49	227445 (49865) 84.4%	382836* (140787) 90.0%	116706* (54707) 79.6%	726987 (169201) 86.4%	41925 (9794) 15.6%	42633* (14035) 10.0%	29859* (12447) 20.4%	114418 (21996) 13.6%
50	512061 (58123) 81.2%	231231* (66757) 81.6%	...	743293 (96863) 81.4%	118243 (15785) 18.8%	52008* (18335) 18.4%	...	170251 (29668) 18.6%
51	141748 (29888) 76.6%	16113* (16113) 59.6%	...	157861 (38423) 74.4%	43277* (11571) 23.4%	10900* (10900) 40.4%	...	54176* (17088) 25.6%
55	226143 (40507) 73.2%	67225* (57493) 68.2%	...	293368* (81665) 72.0%	82902 (19602) 26.8%	31350* (23163) 31.8%	...	114252* (31591) 28.0%
72	132320 (18383) 34.8%	23983* (7451) 29.2%	1387* (1965) 13.0%	157690 (17310) 33.3%	247700 (37546) 65.2%	58237* (18110) 70.8%	9283* (13150) 87.0%	315220 (50196) 66.7%
73	248932 (34239) 59.1%	193204 (29217) 55.2%	206067* (83960) 62.7%	648203 (88437) 58.9%	172515 (24699) 40.9%	156509 (24420) 44.8%	122823* (38192) 37.3%	451847 (44068) 41.1%
75	347846 (51744) 84.2%	3589* (3651) 43.6%	...	351436 (51875) 83.4%	65429 (13506) 15.8%	4649* (4729) 56.4%	...	70078 (13812) 16.6%
76	147012 (25364) 82.4%	12739* (15140) 52.3%	...	159751 (33061) 78.8%	31420 (5450) 17.6%	11602* (10025) 47.7%	...	43022* (11101) 21.2%
80	19616* (5325) 19.3%	100498 (16138) 18.8%	676106 (68366) 22.4%	796220 (66742) 21.8%	82028 (18215) 80.7%	433987 (67304) 81.2%	2346570 (295061) 77.6%	2862585 (289982) 78.2%
ALL	8175796 (79628) 74.2%	6207055 (132632) 63.5%	7372761 (302982) 59.2%	21755612 (309030) 65.4%	2848685 (70332) 25.8%	3566726 (145583) 36.5%	5086973 (309014) 40.8%	11502384 (345666) 34.6%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE II - 9**  
**MALE AND FEMALE PROPORTIONS OF THE**  
**WORKFORCE BY PLANT SIZE**  
**(NOES 1981-1983)**



**NOES QUESTIONNAIRE ITEM NO. 12  
Workers in Non-Administrative Areas**

**Intent**

The intent of this question was to determine the number of employees in the surveyed facility working in those locations where production or service work is conducted.

This item was displayed on the questionnaire as:

12. Of this total number, how many are normally in the work areas as opposed to the administrative or other areas?

-----

**Notes**

"Work area" was defined as that location or locations where the production or service activities of the surveyed facility take place.

Personnel located in the work area as a consequence of their job were included in this response even if their tasks did not relate directly to the product(s) or service(s) of the facility.

Personnel normally employed outside the work area, such as administrative or clerical staff, were excluded.

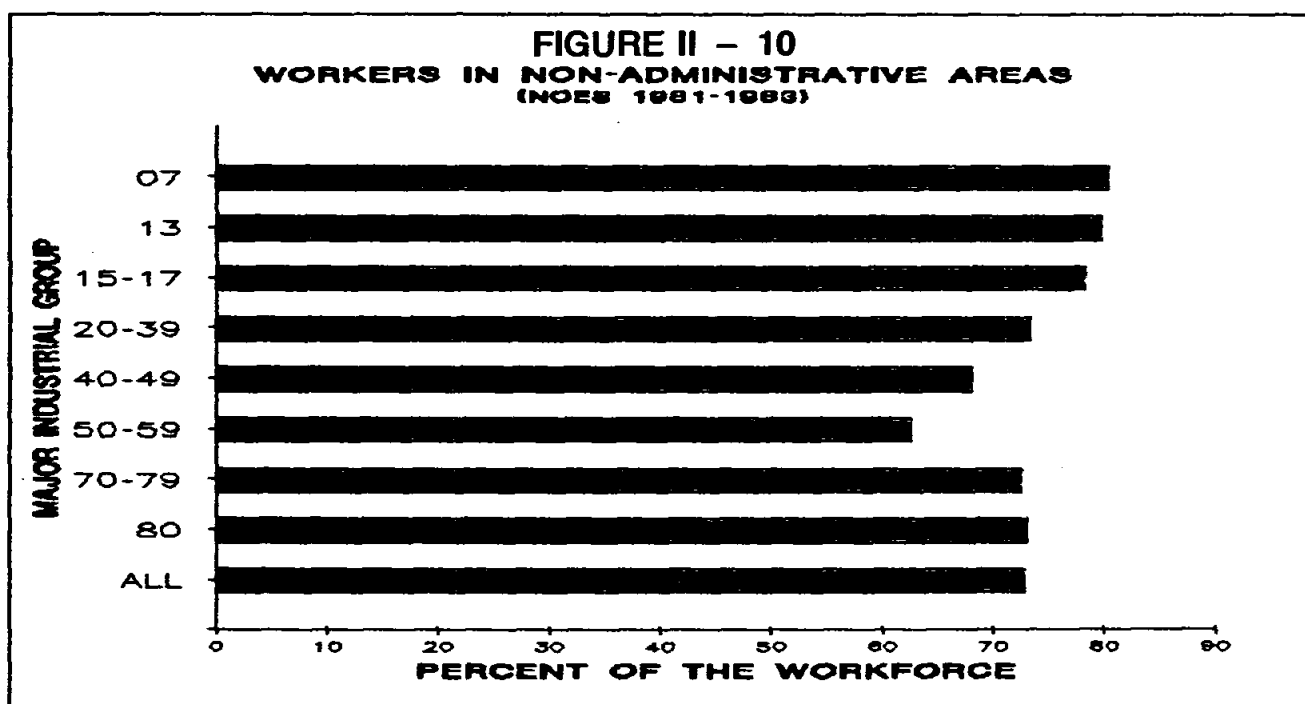
**Analysis**

One analysis of the responses to question 12 is presented.

**Response 12 - Number of employees in work area**

The estimated number and proportion of workers whose normal employment is in the production or service areas of their place of employment are displayed in Figures II-10 and II-11, and Tables II-7 and II-8.

<b>Figure II-10</b>	<b>Workers in non-administrative areas (by major industrial group)</b>
<b>Figure II-11</b>	<b>Workers in non-administrative areas (by 2-digit SIC)</b>
<b>Table II-7</b>	<b>Estimated number and percent of workers in non-administrative areas by industry and plant size (by major industrial group)</b>
<b>Table II-8</b>	<b>Estimated number and percent of workers in non-administrative areas by industry and plant size (by 2-digit SIC)</b>



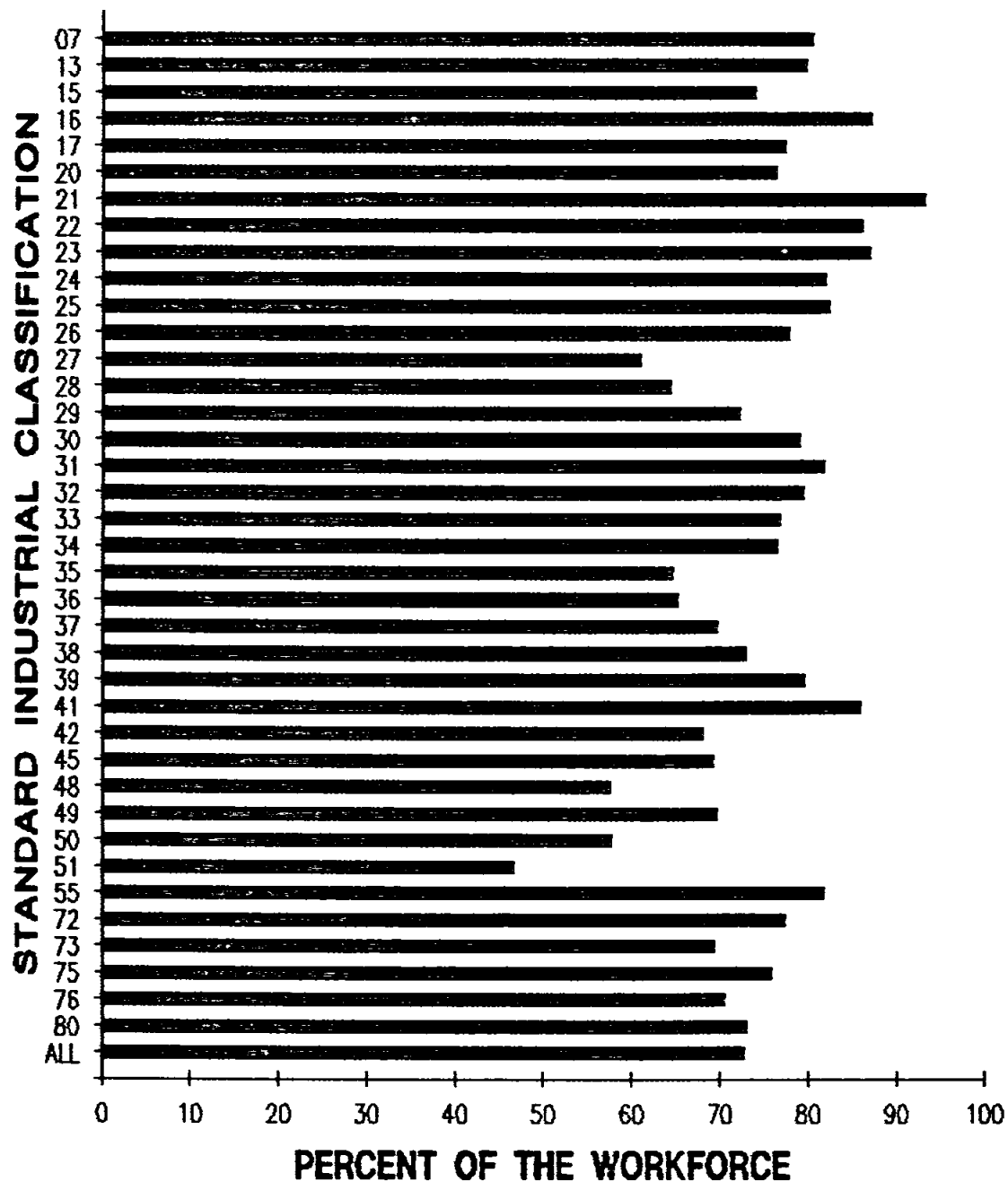
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. II-7

ESTIMATED NUMBER AND PERCENT OF WORKERS IN NON-ADMINISTRATIVE AREAS BY INDUSTRY AND PLANT SIZE

MAJOR GROUP	PLANT SIZE			ALL
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	
07	82460* (24504) 79.5%	6729* (6413) 96.0%	...	89189* (23190) 80.6%
13	158241* (39952) 75.7%	142602* (47384) 82.0%	29998* (33734) 95.6%	330841* (91202) 79.9%
15-17	1599480 (25109) 76.2%	602947 (92666) 81.8%	209118* (95174) 88.6%	2411545 (116199) 78.5%
20-39	3502076 (39557) 75.9%	4850656 (319643) 76.0%	5801742 (166695) 70.2%	14154473 (383537) 73.5%
40-49	962377 (74066) 67.1%	845024 (155918) 73.3%	350152 (78482) 61.0%	2157553 (197211) 68.3%
50-59	701309 (60163) 62.4%	260823* (76355) 63.8%	...	962132 (100032) 62.8%
70-79	1038362 (59178) 74.5%	354350 (50570) 76.3%	203703* (79030) 60.0%	1596415 (100102) 72.7%
80	75709 (18843) 74.5%	413929 (62989) 77.4%	2189972 (258913) 72.5%	2679610 (261562) 73.2%
ALL	8120013 (131736) 73.3%	7477059 (386924) 75.8%	8784685 (342672) 70.5%	24381758 (544786) 73.0%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
...No facilities observed.

**FIGURE II - 11**  
**WORKERS IN NON-ADMINISTRATIVE AREAS**  
 (NOES 1981-1983)



## ESTIMATED NUMBER AND PERCENT OF WORKERS IN NON-ADMINISTRATIVE AREAS BY INDUSTRY AND PLANT SIZE

SIC CODE	PLANT SIZE			ALL
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	
07	82460* (24504) 79.5%	6729* (6413) 96.0%	...	89189* (23190) 80.6%
13	158241* (39952) 75.7%	142602* (47384) 82.0%	29998* (33734) 95.6%	330841* (91202) 79.9%
15	407642 (32985) 72.4%	140780 (32766) 71.0%	116410* (69509) 86.4%	664833 (77837) 74.2%
16	235993 (39340) 83.1%	189268 (40625) 91.1%	92708* (49639) 91.6%	517969 (77674) 87.3%
17	955844 (26841) 76.4%	272899 (65484) 82.4%	...	1228744 (64748) 77.6%
20	288261 (8222) 74.2%	516059 (83131) 76.6%	383947 (85446) 78.1%	1188267 (97089) 76.5%
21	1519* (2267) 81.4%	...	104880* (62569) 93.5%	106399* (62989) 93.3%
22	91074 (5245) 85.9%	292948 (23113) 84.4%	231300* (88623) 88.6%	615322 (84348) 86.2%
23	371496 (9897) 87.6%	545483 (29664) 89.4%	165257* (65322) 79.3%	1082236 (72913) 87.1%
24	242103 (20529) 79.7%	153807 (20569) 83.8%	79820* (45136) 86.4%	475730 (65211) 82.1%
25	110544 (16215) 79.5%	221023 (34399) 86.2%	96972* (51166) 78.8%	428539 (64362) 82.6%
26	108158 (13917) 78.6%	220683 (41083) 78.4%	159260* (50944) 77.0%	488101 (71122) 78.0%
27	318843 (14170) 66.7%	229404 (37750) 63.6%	176460* (55470) 51.0%	724707 (17227) 61.2%
28	117849 (3948) 65.2%	150352 (20017) 57.6%	323858 (80883) 68.0%	592059 (86668) 64.5%
29	31501* (14085) 76.9%	50613* (18069) 80.0%	78401* (53178) 66.7%	160516* (63173) 72.4%
30	176305 (20885) 78.4%	247073* (73863) 83.9%	172147* (57585) 73.7%	595525 (93492) 79.1%
31	21909* (6217) 88.0%	111646* (30428) 82.4%	10645* (13596) 68.0%	144200 (32727) 81.9%
32	182821 (14167) 77.1%	172990 (26245) 82.8%	102171* (40668) 79.2%	457983 (37652) 79.6%
33	109749 (8029) 79.3%	241630 (22222) 77.7%	473345 (71891) 76.2%	824725 (73658) 77.0%

SIC CODE	PLANT SIZE			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	ALL
34	432905 (9393) 78.0%	455291 (20202) 76.3%	263581* (84529) 75.1%	1151777 (91597) 76.7%
35	438319 (10315) 72.2%	417447 (14362) 63.1%	689116 (94890) 61.9%	1544883 (91361) 64.9%
36	166702 (10622) 72.3%	388694 (8498) 70.3%	732446 (117695) 61.9%	1287842 (120062) 65.5%
37	97702 (12654) 76.9%	178947 (22670) 74.8%	1035101 (149542) 68.4%	1311750 (141154) 69.8%
38	70108 (9607) 67.0%	136627 (16713) 70.3%	348373* (111262) 75.7%	555108 (118704) 73.1%
39	124209 (10758) 74.9%	119937* (224895) 80.3%	174659* (107295) 83.4%	418805* (215201) 79.8%
41	98161 (22191) 83.4%	73267* (32070) 89.9%	...	171428* (43346) 86.1%
42	338451 (37995) 69.4%	164778* (42323) 63.7%	57829* (40452) 77.3%	561058 (60050) 68.3%
45	57935* (15414) 74.8%	86827* (59122) 79.4%	168168* (42468) 63.6%	312931 (66269) 69.4%
48	243339 (48901) 57.2%	114647* (29312) 65.0%	29519* (21464) 42.1%	387505 (57853) 57.7%
49	182420 (44543) 67.7%	324738* (121068) 76.3%	80883* (49144) 55.2%	588041* (149419) 69.9%
50	361294 (47968) 57.3%	167366 (41628) 59.1%	...	528659 (72022) 57.9%
51	92776* (26920) 50.1%	6635* (6635) 24.6%	...	99410* (29126) 46.9%
55	247240 (44887) 80.0%	86823* (70498) 88.1%	...	334063* (94278) 82.0%
72	297651 (40802) 78.3%	65226* (20602) 79.3%	3668* (5196) 34.4%	366545 (47441) 77.5%
73	306433 (39332) 72.7%	259640 (40957) 74.2%	200035* (77164) 60.8%	766108 (83441) 69.6%
75	312809 (47210) 75.7%	7650* (7782) 92.9%	...	320459 (47595) 76.0%
76	121468 (18714) 68.1%	21834* (17442) 89.7%	...	143302 (29668) 70.7%
80	75709 (18843) 74.5%	413929 (62989) 77.4%	2189972 (258913) 72.5%	2679610 (261562) 73.2%
ALL	8077942 (83845) 73.3%	7410677 (121679) 75.8%	8777809 (385619) 70.4%	24266427 (444855) 73.0%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**NOES QUESTIONNAIRE ITEM NO. 13**  
**Labor Unions in the Workplace**

**Intent**

The intent of this question was to determine the prevalence of labor unions in the facilities included in the survey population.

This item was displayed on the questionnaire as:

13. Are there any labor unions operating in this facility?

1 No

2 Yes; list complete union names and acronyms (initials)

<u>Union Names</u>	<u>Acronym</u>
_____	-----
_____	-----
_____	-----
_____	-----
_____	-----
_____	-----
_____	-----

**Notes**

A union is any organization in which any of the facility's employees participate as members, which exists for the purpose of negotiating with the employer concerning grievances, wages, working hours, and conditions.

Any organization whose purpose is as defined above which existed in a surveyed facility resulted in a "yes" response and a listing of appropriate organizational names and acronyms.

The existence of organizations such as credit unions, fraternal associations, or social groups composed of facility employees whose purpose was not as defined above did not constitute a positive response, and they were not listed.



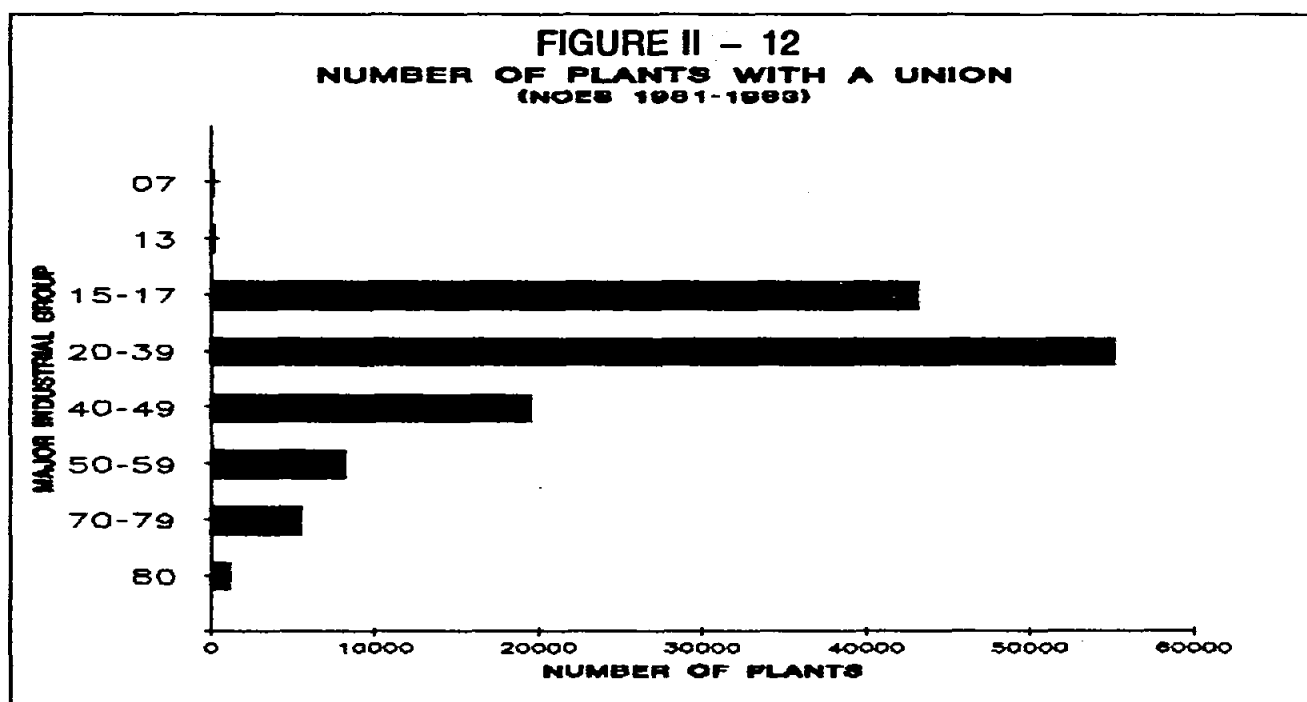
## Analysis

One analysis of the responses to question 13 is presented.

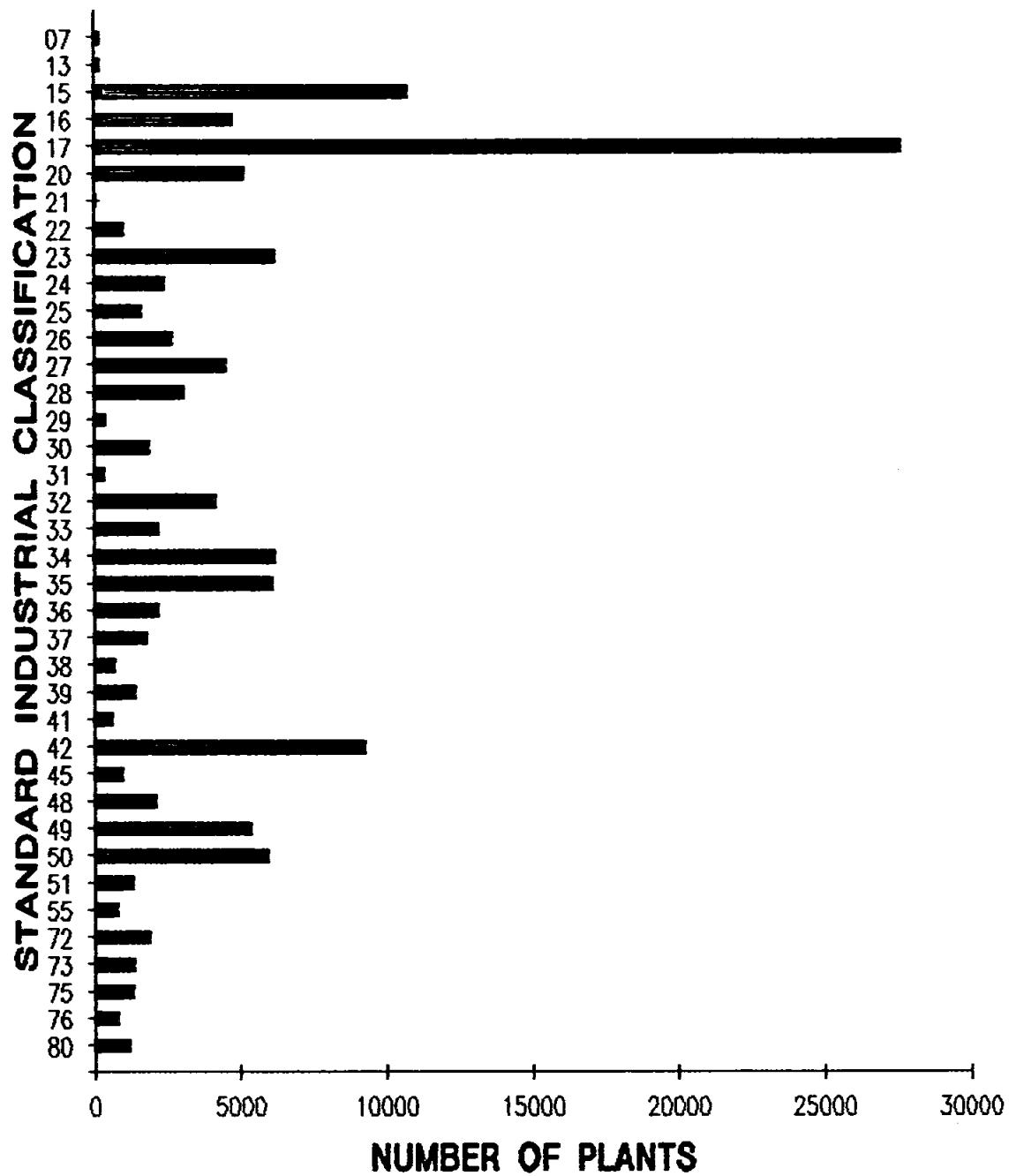
### Response 13.2 - Unions operating in industrial facilities

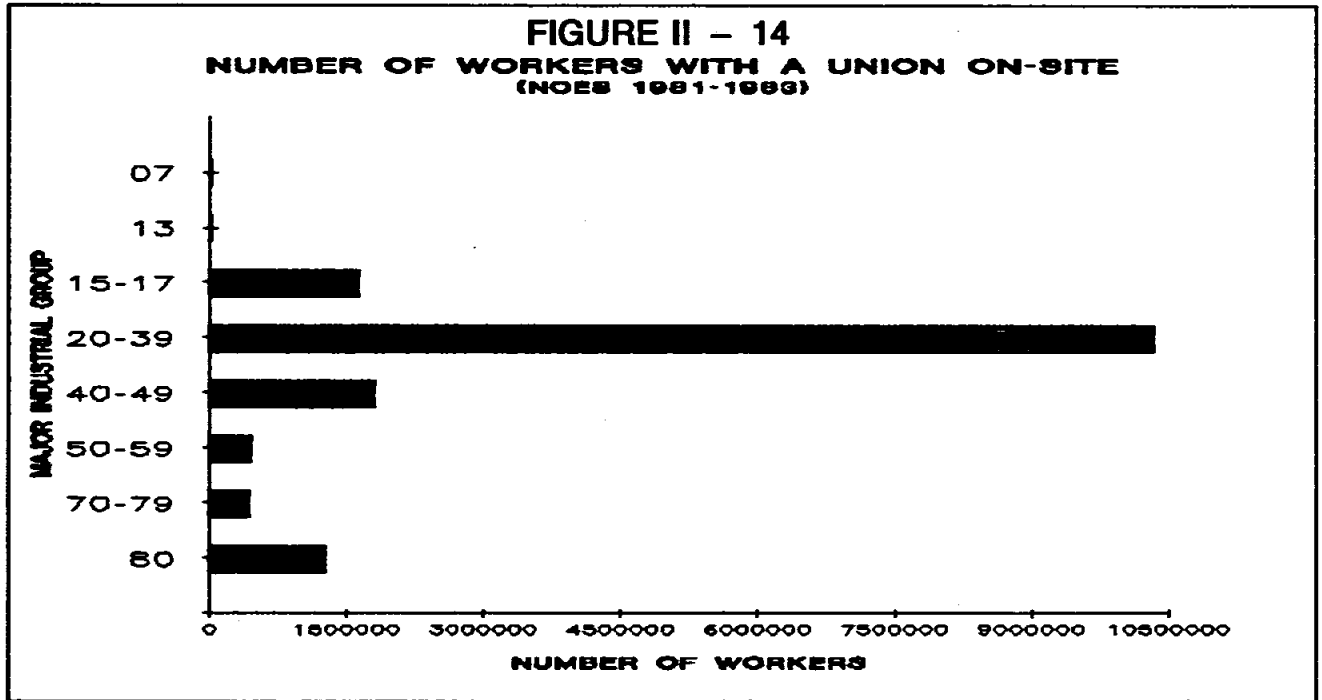
The estimates of the number and percent of plants, and workers in those plants, where at least one labor union is actively representing some or all of the facility workers are displayed in Figures II-12, II-13, II-14, II-15, II-16, II-17, II-18, II-19, II-20, and II-21, and Tables II-9 and II-10.

Figure II-12	Number of plants with a union (by major industrial group)
Figure II-13	Number of plants with a union (by 2-digit SIC)
Figure II-14	Number of workers with a union on-site (by major industrial group)
Figure II-15	Number of workers with a union on-site (by 2-digit SIC)
Figure II-16	Plants with a union (by major industrial group)
Figure II-17	Plants with a union (by 2-digit SIC)
Figure II-18	Workers with a union on-site (by major industrial group)
Figure II-19	Workers with a union on-site (by 2-digit SIC)
Figure II-20	Proportion of plants with a union on-site
Figure II-21	Workers with an in-plant union by plant size
Table II-9	Number and percent of plants and employees in plants which have union representation at the plant site (by major industrial group)
Table II-10	Number and percent of plants and employees in plants which have union representation at the plant site (by 2-digit SIC)

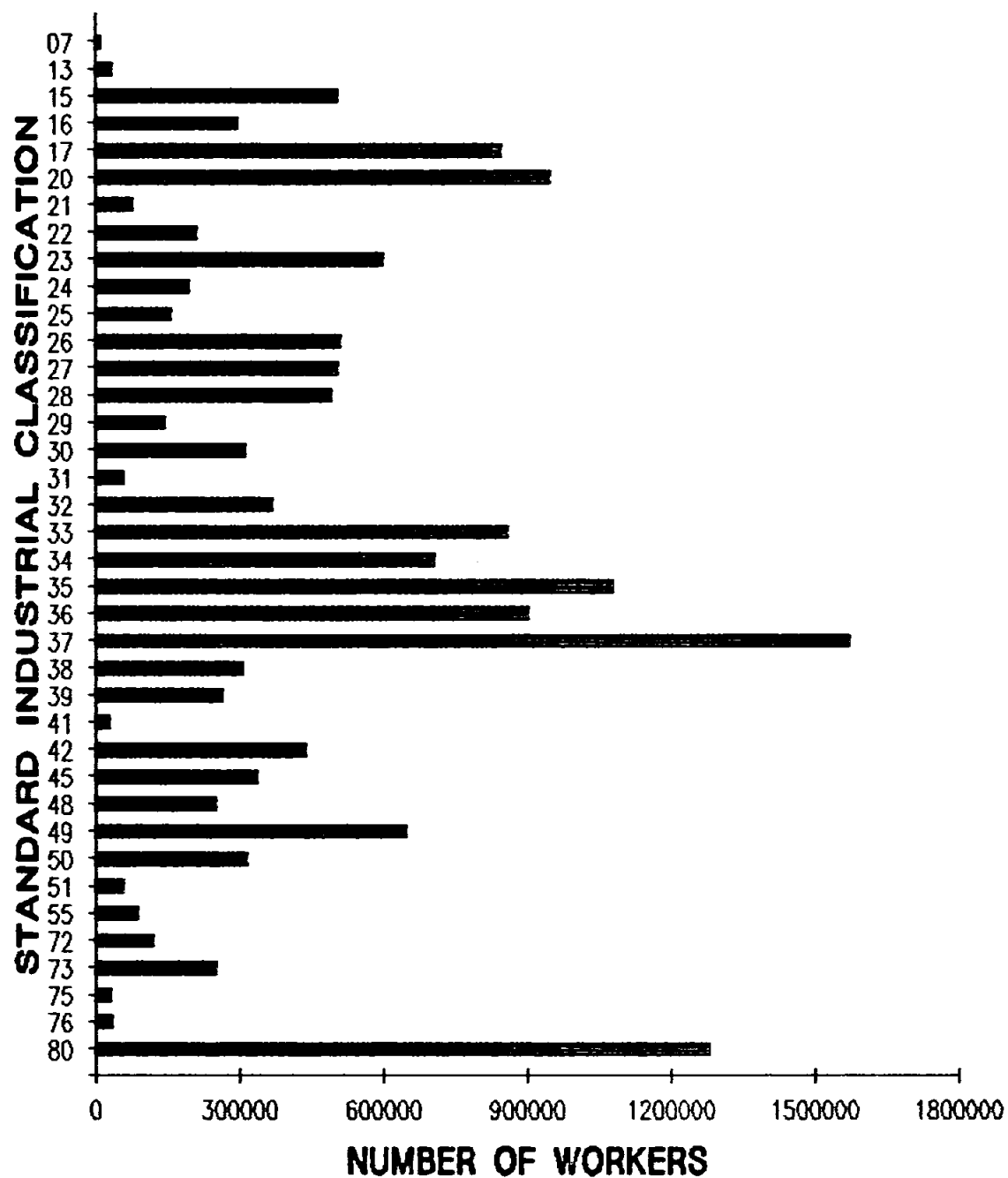


**FIGURE II - 13**  
**NUMBER OF PLANTS WITH A UNION**  
 (NOES 1981-1983)





**FIGURE II - 15**  
**NUMBER OF WORKERS WITH A UNION ON-SITE**  
 (NOES 1981-1983)



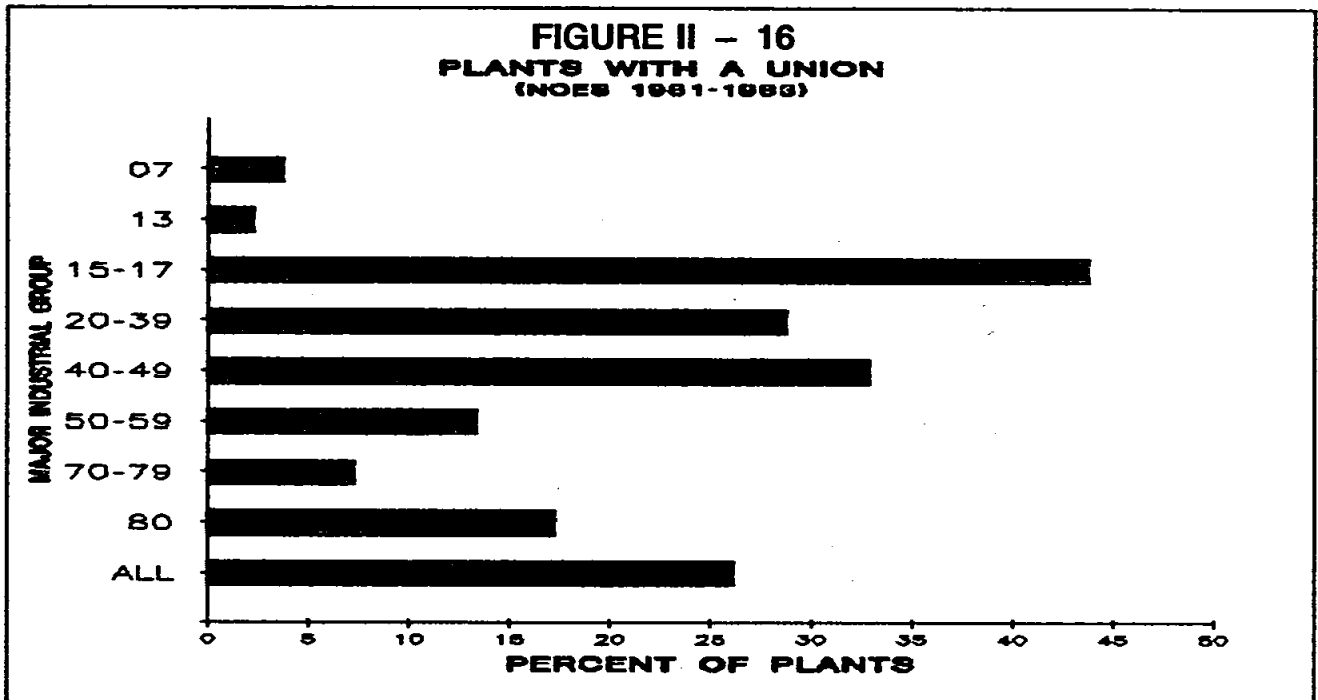
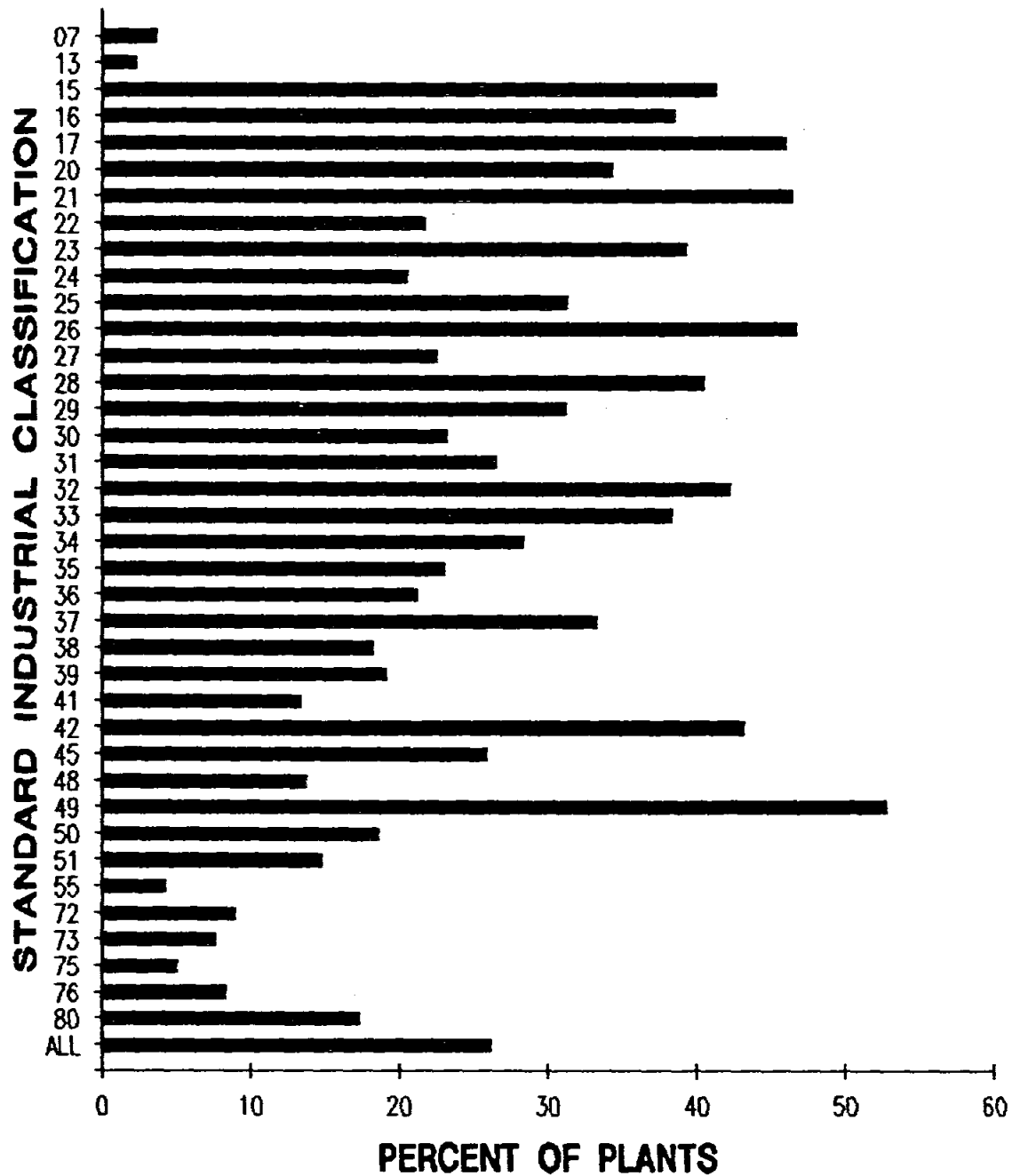
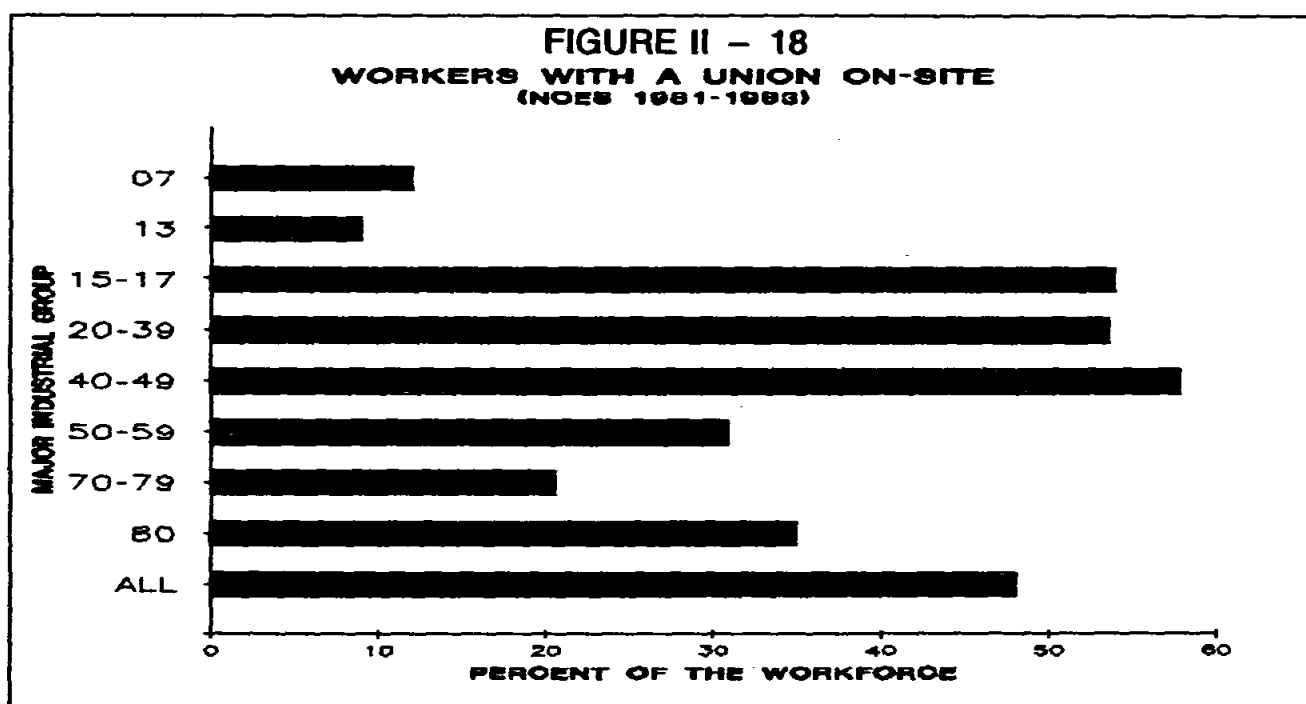


FIGURE II - 17  
PLANTS WITH A UNION  
(NOES 1981-1983)





NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. II-9

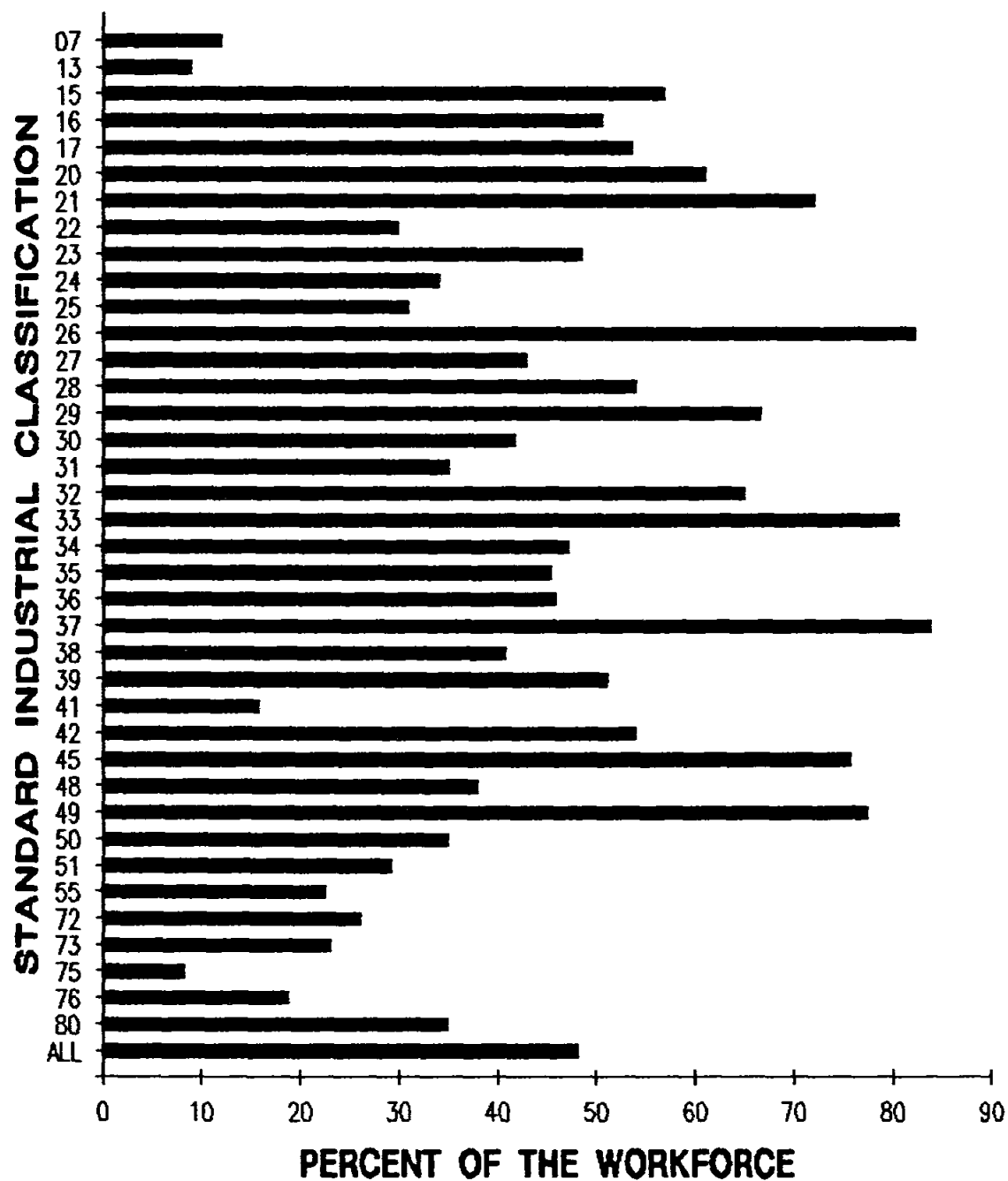
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
HAVE UNION REPRESENTATION AT THE PLANT SITE

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	216* (201) 3.9%	...	...	216* (201) 3.8%	13529* (13347) 13.0%	...	...	13529* (13347) 12.2%
13	152* (178) 1.8%	80* (62) 7.8%	...	232* (134) 2.4%	10413* (11623) 5.0%	27118* (21242) 15.6%	...	37531* (14235) 9.1%
15-17	40360 (3017) 42.8%	2885 (462) 69.6%	93* (40) 38.6%	43338 (3128) 43.9%	1044520 (60107) 49.8%	510998 (84818) 69.3%	105614* (42017) 44.7%	1661133 (135848) 54.1%
20-39	35202 (1639) 23.0%	16127 (1137) 50.8%	3969 (279) 63.3%	55298 (2231) 28.9%	1414800 (69019) 30.7%	3267419 (230680) 51.2%	5671999 (285501) 68.6%	10354218 (443894) 53.8%
40-49	14904 (2223) 28.0%	4283 (795) 73.3%	436* (132) 93.2%	19623 (2202) 33.0%	474039 (61505) 33.1%	818064 (161101) 70.9%	541037 (101597) 94.3%	1833140 (193351) 58.0%
50-59	6411 (1154) 11.0%	1840* (634) 69.2%	...	8251 (1303) 13.5%	188142 (30847) 16.7%	287421* (101295) 70.3%	...	475563 (108595) 31.0%
70-79	4715 (1055) 6.4%	789* (223) 33.6%	78* (40) 22.0%	5582 (1082) 7.4%	175186 (34150) 12.6%	137930* (42132) 29.7%	141669* (64683) 41.7%	454785 (69751) 20.7%
80	316* (319) 11.1%	199* (108) 9.2%	715 (120) 34.7%	1230* (347) 17.4%	3161* (3189) 3.1%	57251* (32880) 10.7%	1224250 (221503) 40.5%	1284662 (217828) 35.1%
ALL	102277 (4399) 22.8%	26201 (1614) 52.4%	5292 (336) 56.1%	133771 (4760) 26.3%	3323791 (120833) 30.0%	5106201 (316115) 51.8%	7684569 (383205) 61.6%	16114560 (563355) 48.2%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
...No facilities observed.



**FIGURE II - 19**  
**WORKERS WITH A UNION ON-SITE**  
 (NOES 1981-1983)



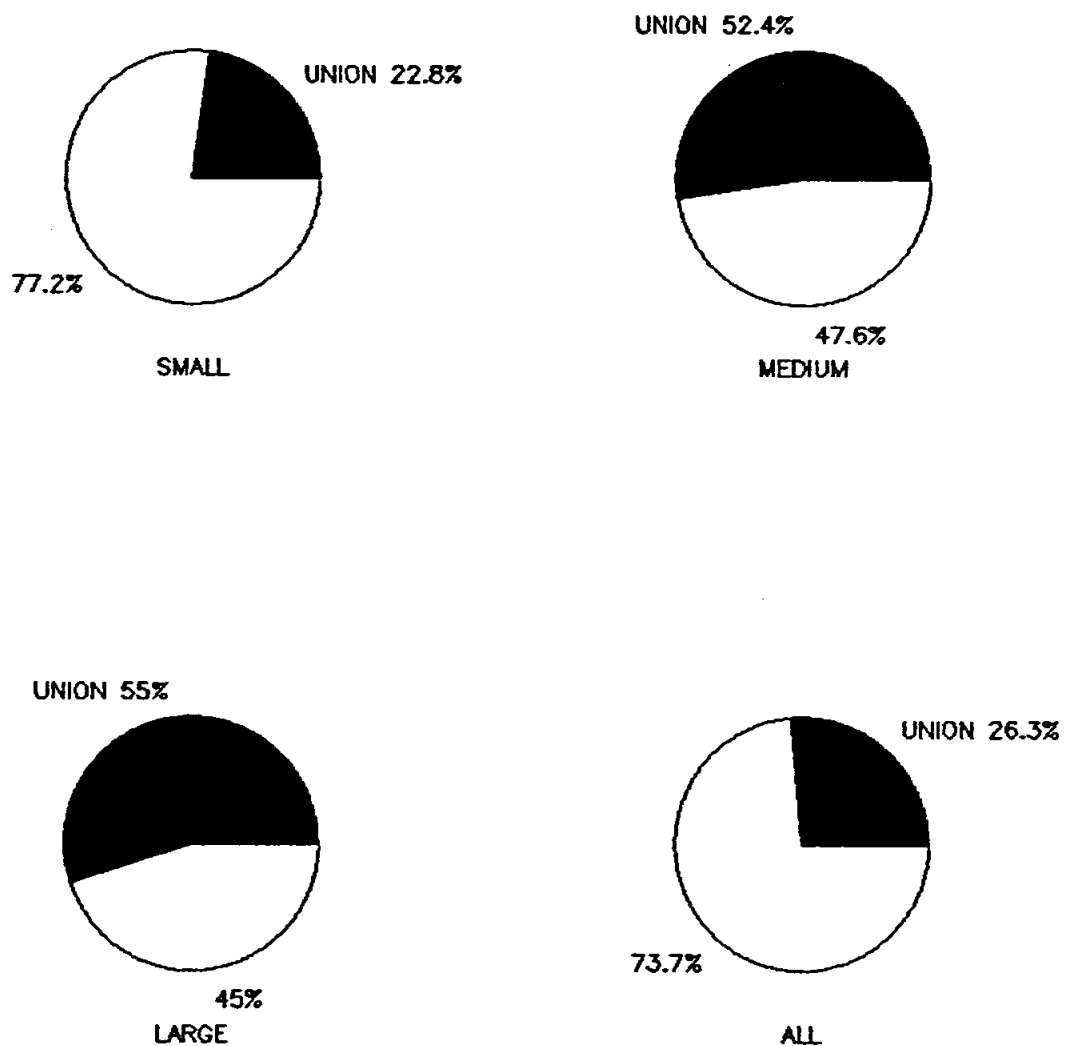
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
HAVE UNION REPRESENTATION AT THE PLANT SITE

SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	216* (201) 3.9%	...	...	216* (201) 3.8%	13529* (13347) 13.0%	...	...	13529* (13347) 12.2%
13	152* (178) 1.8%	80* (62) 7.8%	...	232* (134) 2.4%	10413* (11623) 5.0%	27118* (21242) 15.6%	...	37531* (14235) 9.1%
15	9882 (15711) 39.7%	865* (277) 78.1%	71* (30) 52.8%	10818 (1583) 41.4%	287320 (36214) 51.0%	144147* (43077) 72.7%	79098* (30307) 58.7%	510566 (72471) 57.0%
16	3955 (846) 35.1%	853 (192) 76.2%	22* (18) 20.7%	4830 (847) 38.6%	104313 (19243) 36.7%	169671* (45577) 81.7%	26516* (20596) 26.2%	300500 (58787) 50.7%
17	26522 (2220) 45.6%	1167* (304) 60.8%	...	27689 (2275) 46.1%	652887 (42599) 52.2%	197179 (45118) 59.5%	...	850066 (65070) 53.7%
20	2915 (477) 25.5%	1844 (315) 57.4%	461 (92) 82.5%	5221 (620) 34.4%	145813 (15356) 37.5%	408076 (75577) 60.6%	397818 (75081) 80.9%	951707 (98370) 61.2%
21	4* (6) 14.6%	...	46* (37) 58.6%	51* (37) 46.5%	258* (345) 13.8%	...	82069* (68223) 73.2%	82327* (68177) 72.2%
22	411 (91) 14.0%	541 (135) 34.1%	98* (65) 32.9%	1050 (214) 21.8%	33064 (7954) 31.2%	113515* (31663) 32.7%	67483* (43828) 25.8%	214062* (58651) 30.0%
23	4619 (606) 36.9%	1518 (245) 48.9%	116* (62) 48.0%	6253 (802) 39.4%	187608 (30942) 44.3%	313653 (45117) 51.4%	102401* (50494) 49.1%	603662 (94500) 48.6%
24	1829* (484) 17.1%	618* (205) 53.9%	19* (8) 18.1%	2467 (497) 20.6%	62521* (15959) 20.6%	99710* (33095) 54.3%	35767* (18789) 38.7%	197997 (43657) 34.2%
25	1193* (361) 28.7%	456* (122) 43.0%	29* (25) 24.0%	1679* (426) 31.4%	43839* (17654) 31.5%	88912* (31243) 34.7%	28020* (27305) 22.8%	160772* (45185) 31.0%
26	1283 (308) 31.2%	1261 (262) 80.4%	214* (73) 100.0%	2759 (411) 46.8%	79028 (16540) 57.4%	230016 (52032) 81.7%	206864* (65220) 100.0%	515908 (92775) 82.4%
27	3644 (760) 20.1%	739* (185) 39.4%	206* (82) 65.3%	4589 (853) 22.6%	123822 (19798) 25.9%	153295* (41162) 42.5%	232380* (68523) 67.2%	509496 (93335) 43.0%
28	2241 (454) 36.3%	738 (92) 63.6%	151* (68) 39.8%	3130 (507) 40.6%	82480 (14378) 45.6%	181905 (25979) 69.7%	232508* (103954) 48.8%	496892 (106598) 54.1%
29	190* (132) 18.8%	181* (75) 61.9%	69* (40) 68.4%	440* (134) 31.3%	6930* (4851) 16.9%	50598* (20286) 80.0%	90619* (69338) 77.1%	148147* (72151) 66.8%
30	1211* (429) 18.0%	609* (162) 39.6%	153* (78) 68.4%	1972 (471) 23.3%	55085* (15477) 24.5%	99247 (21628) 33.7%	161461* (71766) 69.1%	315792 (71736) 41.9%
31	159* (166) 17.1%	247* (78) 43.4%	...	406* (180) 26.6%	3480* (3001) 14.0%	58419* (20149) 43.1%	...	61899* (20234) 35.2%
32	3380 (549) 38.4%	669 (149) 66.1%	176* (73) 95.5%	4225 (597) 42.3%	106368 (17139) 44.9%	146981 (33633) 70.3%	120592* (49149) 93.5%	373941 (58607) 65.0%
33	960 (192) 23.2%	990 (245) 67.4%	330 (64) 98.0%	2281 (347) 38.4%	53046 (10661) 38.3%	207766 (47459) 66.8%	603141 (94780) 97.0%	863954 (98768) 80.7%

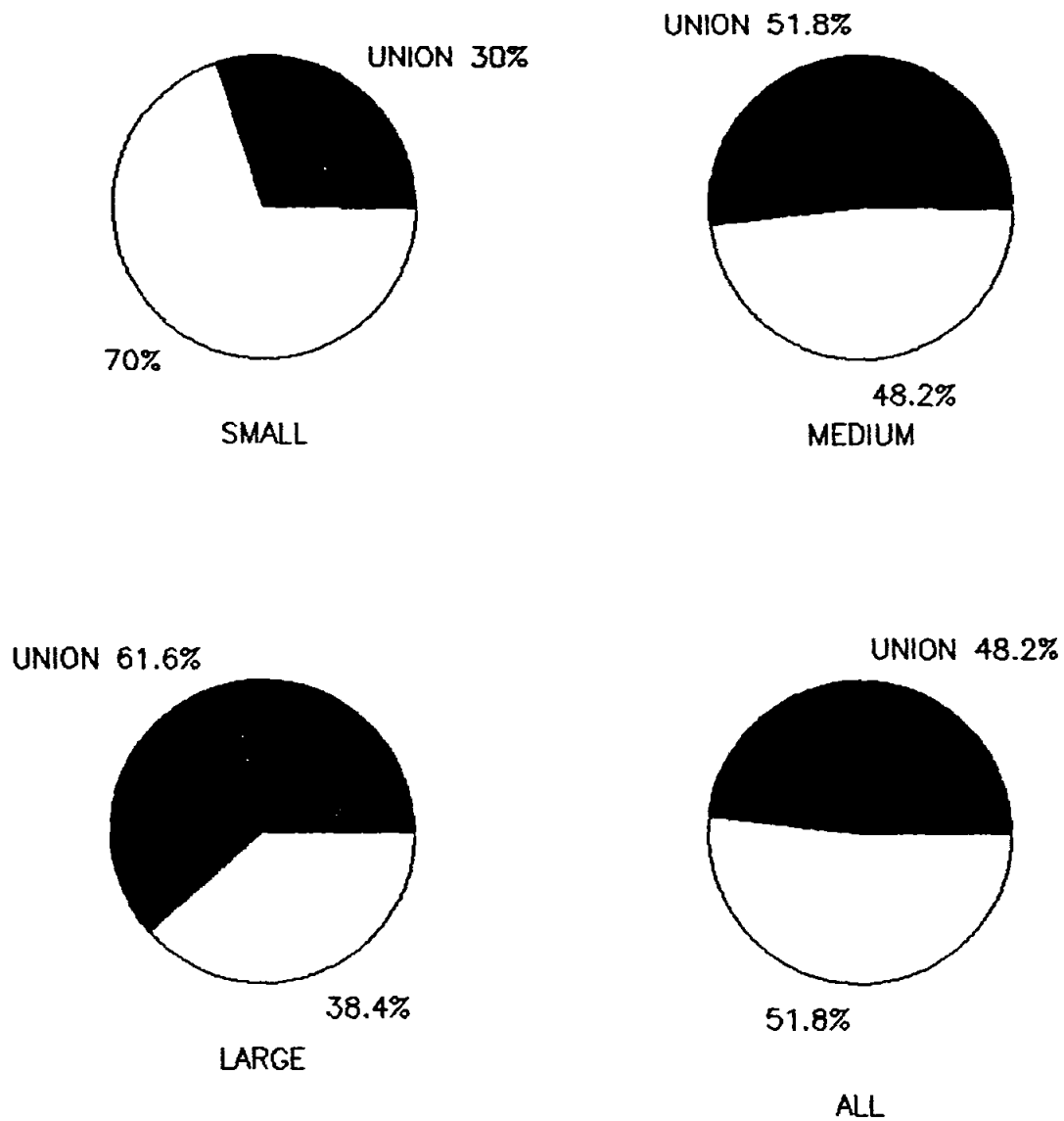
SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	4371 (744) 23.6%	1706 (237) 54.6%	167* (67) 48.3%	6244 (765) 28.4%	169208 (23665) 30.5%	321559 (44292) 53.9%	220655* (88442) 62.9%	711422 (102400) 47.3%
35	4080 (701) 18.0%	1683 (292) 49.4%	432 (79) 55.1%	6195 (813) 23.1%	143485 (25925) 23.6%	320536 (52373) 48.5%	619006 (111301) 55.6%	1083027 (125442) 45.5%
36	868* (274) 12.2%	968 (195) 36.1%	417* (112) 53.0%	2253 (328) 21.3%	34433* (11671) 14.9%	207264 (47736) 37.5%	664949 (126445) 56.2%	906647 (132505) 46.1%
37	791* (362) 19.9%	698 (104) 58.7%	374 (82) 89.9%	1863 (403) 33.4%	38821* (19852) 30.6%	132447 (27619) 55.4%	1405477 (194452) 92.8%	1576746 (203346) 83.9%
38	184* (198) 6.8%	357* (100) 37.3%	207* (94) 49.8%	748* (218) 18.4%	9088* (7681) 8.7%	70339* (23047) 36.2%	231416* (111068) 50.3%	310843* (106472) 40.9%
39	868* (286) 13.2%	303* (447) 37.9%	302* (226) 89.3%	1472* (542) 19.2%	36423* (13348) 22.0%	63182* (81774) 42.3%	169372* (127002) 80.9%	268977* (122117) 51.3%
41	571* (333) 12.9%	97* (83) 19.0%	...	668* (329) 13.5%	20311* (12867) 17.3%	11518* (9829) 14.1%	...	31829* (14709) 16.0%
42	8283 (1438) 41.4%	1024 (234) 69.1%	50* (35) 60.4%	9357 (1488) 43.3%	231012 (38401) 47.4%	170965 (35866) 66.1%	42123* (22071) 56.3%	444101 (56472) 54.1%
45	417* (244) 12.9%	471* (334) 79.9%	147* (57) 100.0%	1036* (463) 26.0%	16389* (8674) 21.1%	61827* (44248) 56.5%	264255* (77656) 100.0%	342471* (86866) 75.9%
48	1348* (760) 9.2%	772 (172) 85.6%	34* (21) 99.0%	2154* (744) 13.8%	48312* (17495) 11.3%	137966 (33494) 78.2%	70083* (43687) 100.0%	256361 (55975) 38.1%
49	3647* (1219) 44.4%	1593* (514) 85.6%	173* (99) 99.8%	5413 (1264) 52.8%	146502* (45293) 54.4%	359154* (141107) 84.4%	146565* (65566) 100.0%	652221 (155395) 77.5%
50	4932 (1071) 16.2%	1075* (299) 59.6%	...	6006 (1164) 18.7%	147654 (33536) 23.4%	173246* (56903) 61.2%	...	320900 (77536) 35.1%
51	1155* (596) 12.7%	237* (237) 100.0%	...	1392* (713) 14.9%	35297* (18668) 19.1%	27013* (27013) 100.0%	...	62310* (37178) 29.4%
55	324* (319) 1.7%	528* (475) 85.2%	...	853* (564) 4.4%	5191* (5108) 1.7%	87162* (78399) 88.4%	...	92353* (78399) 22.7%
72	1418* (570) 6.9%	530* (171) 78.6%	...	1948* (586) 9.1%	64327* (21903) 16.9%	60089* (19556) 73.1%	...	124416 (25320) 26.3%
73	1126* (503) 6.8%	222* (86) 14.9%	78* (40) 22.8%	1426* (498) 7.8%	49696* (25386) 11.8%	65169* (25180) 18.6%	141669* (64683) 43.1%	256533 (61773) 23.3%
75	1365* (619) 5.2%	...	...	1365* (619) 5.2%	35387* (14575) 8.6%	...	...	35387* (14575) 8.4%
76	806* (387) 8.3%	36* (45) 29.4%	...	842* (376) 8.5%	25776* (11949) 14.4%	12672* (15755) 52.1%	...	38448* (16374) 19.0%
80	316* (319) 11.1%	199* (108) 9.2%	715 (120) 34.7%	1230* (347) 17.4%	3161* (3189) 3.1%	57251* (32880) 10.7%	1224250 (221503) 40.5%	1284662 (217828) 35.1%
All	101640 (4398) 22.8%	25924 (1166) 52.3%	5276 (269) 56.0%	132840 (4922) 26.3%	3312278 (133371) 30.0%	5045172 (234989) 51.6%	7675563 (315478) 61.6%	16033014 (491439) 48.2%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE II - 20**  
**PROPORTION OF PLANTS WITH A UNION ON-SITE**  
**(NOES 1981-1983)**



**FIGURE II - 21**  
**WORKERS WITH AN IN-PLANT UNION**  
**BY PLANT SIZE**  
**(NOES 1981-1983)**





**NATIONAL OCCUPATIONAL EXPOSURE SURVEY  
(1981-1983)  
Analyses of Management Interview Responses**

**Section III - Medical Services**

- |                         |                             |
|-------------------------|-----------------------------|
| - health units          | - nurse utilization         |
| - first aid personnel   | - screening examinations    |
| - on site physicians    | - pre-placement examination |
| - off site physicians   | - health information        |
| - physician utilization | - post-illness examination  |
| - employed nurses       | - termination examinations  |
| - number of nurses      | - medical record retention  |

**NOES QUESTIONNAIRE ITEM NO. 14**  
**Existence of An On-Site Health Unit**

**Intent**

The intent of this question was to determine whether there was a company policy which resulted in the provision of a health unit. This was defined as a work area or portion of the facility reserved solely for the medical examination and/or treatment of employees, permanently staffed at least part-time by individuals responsible for operation of the unit.

This item was displayed on the questionnaire as:

14. Is there a formally established health unit at this facility?

- 1 Yes, physician in charge
- 2 Yes, registered nurse in charge
- 3 Yes, licensed practical nurse in charge
- 4 Yes, other in charge
- 5 No

**Notes**

Resting rooms for female employees, rooms used only for the storage of medical supplies, and rooms reserved only for specific purposes other than basic health care (such as audiometric testing) were not considered to be health units.

The lowest-numbered applicable response was coded. For example, if a physician was in charge of the unit during at least part of the work week, and a nurse provided services at all other times, response 14.1 was selected.

**Analysis**

Three analyses of the responses to question 14 are presented.

(1) Response 14.1 - Health unit with a physician in charge

The estimates of the plants which have on-site health units with a physician in charge, and workers in those plants (by number and proportion of the total) are displayed in Figures III-I and III-2, and Tables III-1 and III-2.

Figure III-1	On-site health units with a physician in charge (by major industrial group)
Figure III-2	On-site health units with a physician in charge (by 2-digit SIC)



Table III-1	Number and percent of plants and employees in plants which have a health unit with a physician in charge (by major industrial group)
Table III-2	Number and percent of plants and employees in plants which have a health unit with a physician in charge (by 2-digit SIC)

(2) Response 14.2 or 14.3 - Health units with a nurse in charge

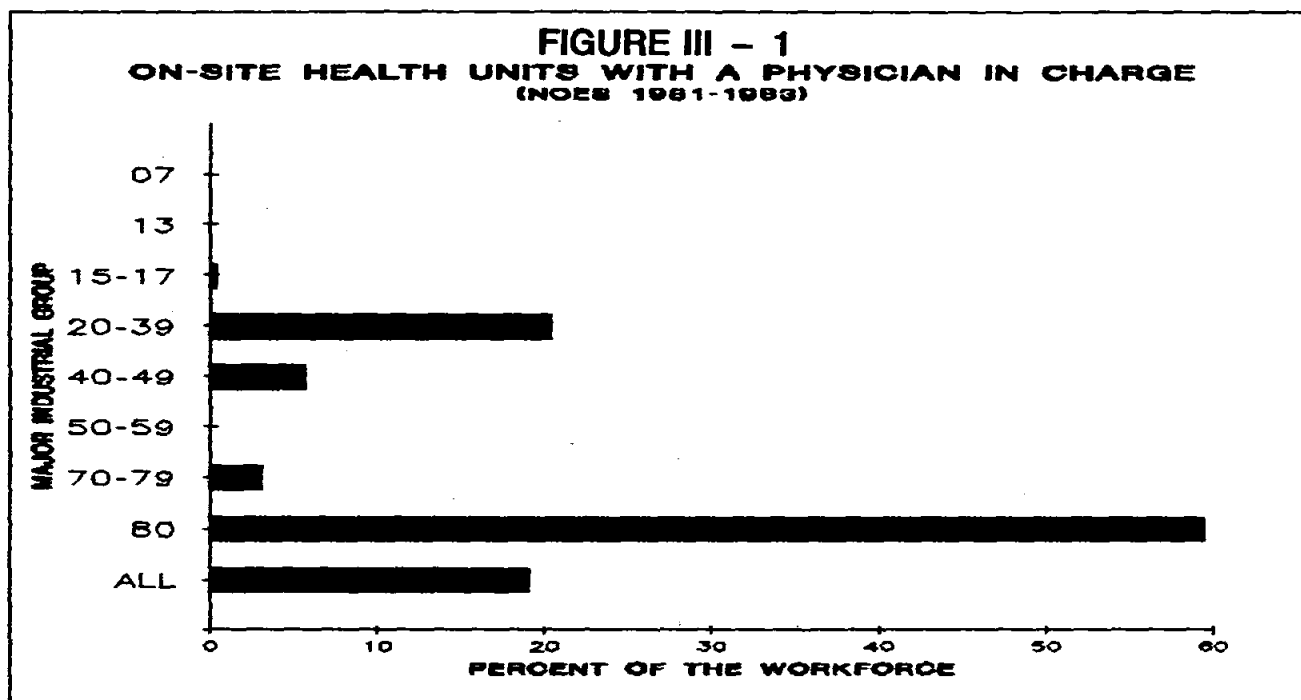
The estimates of the plants which have an on-site health unit with a nurse (RN or LPN) in charge, and workers in those plants (by number and proportion of the totals) are displayed in Figures III-3 and III-4, and Tables III-3 and III-4.

Figure III-3	On-site health units with a nurse in charge (by major industrial group)
Figure III-4	On-site health units with a nurse in charge (by 2-digit SIC)
Table III-3	Number and percent of plants and employees in plants which have a health unit with a nurse in charge (by major industrial group)
Table III-4	Number and percent of plants and employees in plants which have a health unit with a nurse in charge (by 2-digit SIC)

(3) Response 14.1, 14.2, 14.3, or 14.4 - Health units with a designated individual in charge

The estimates of the plants which have an on-site health unit with at least some individual designated to provide care, and workers in those plants (by number and proportion of the totals) are displayed in Figures III-5, III-6, III-7 and Tables III-5 and III-6.

Figure III-5	On-site health units with designated staff in charge (by major industrial group)
Figure III-6	On-site health units with designated staff in charge (by 2-digit SIC)
Figure III-7	On-site health units by personnel type in charge
Table III-5	Number and percent of plants and employees in plants which have a health unit with designated staff in charge (by major industrial group)
Table III-6	Number and percent of plants and employees in plants which have a health unit with designated staff in charge (by 2-digit SIC)



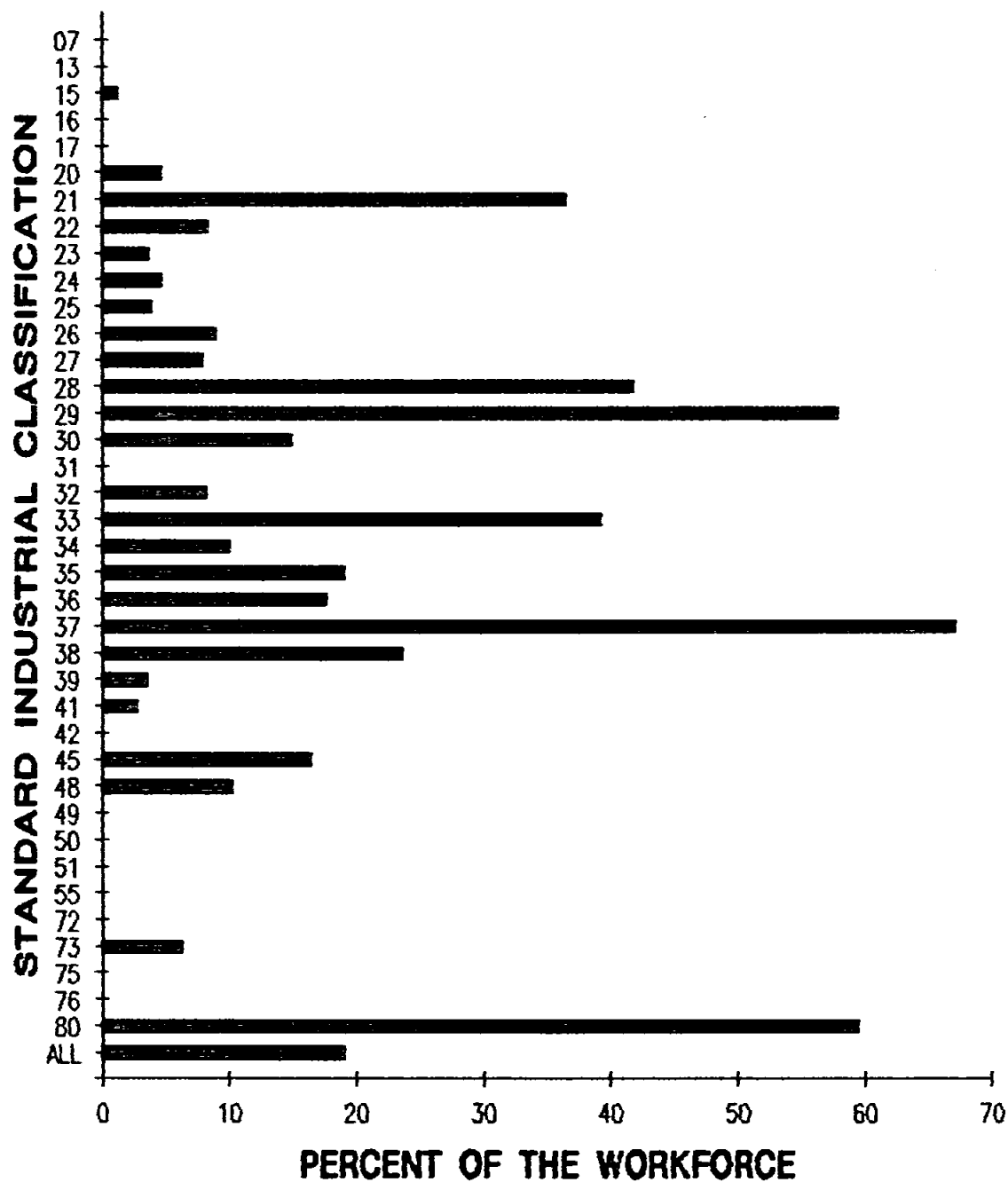
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-1

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
HAVE A HEALTH UNIT WITH A PHYSICIAN IN CHARGE

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...
15-17	...	...	3* (3) 1.4%	3* (3) .0%	...	...	12768* (11270) 5.4%	12768* (11270) .4%
20-39	104* (87) .1%	263* (108) .8%	1522 (166) 24.3%	1889 (247) 1.0%	8032* (7643) .2%	77515* (24573) 1.2%	3858311 (394793) 46.7%	3943858 (405745) 20.5%
40-49	202* (210) .4%	96* (64) 1.6%	60* (30) 12.8%	358* (228) .6%	5865* (6101) .4%	31212* (21138) 2.7%	145020* (51004) 25.3%	182098* (53421) 5.8%
50-59	...	...	...	...	...	...	...	...
70-79	...	15* (13) .6%	34* (28) 9.5%	48* (29) .1%	...	7143* (6524) 1.5%	63615* (41134) 18.7%	70758* (40700) 3.2%
80	236* (168) 8.3%	772 (148) 35.7%	1192 (191) 57.8%	2200 (296) 31.1%	8654* (5963) 8.5%	211566 (40483) 39.6%	1962037 (259104) 64.9%	2182256 (267448) 59.6%
ALL	542* (283) .1%	1146 (194) 2.3%	2811 (257) 29.8%	4499 (449) .9%	22551* (11455) .2%	327436 (52269) 3.3%	6041750 (476882) 48.5%	6391737 (490709) 19.1%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
...No facilities observed.

**FIGURE III - 2**  
**ON-SITE HEALTH UNITS WITH A PHYSICIAN IN CHARGE**  
**(NOES 1981-1983)**



## NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-2

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
HAVE A HEALTH UNIT WITH A PHYSICIAN IN CHARGE

SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...
15	...	...	3* (3) 2.5%	3* (3) .0%	...	...	12768* (11270) 9.5%	12768* (11270) 1.4%
16	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...
20	...	...	58* (30) 10.4%	58* (30) .4%	...	...	74005* (39246) 15.0%	74005* (39246) 4.8%
21	...	...	11* (11) 13.5%	11* (11) 9.8%	...	...	41763* (36135) 37.2%	41763* (36135) 36.6%
22	...	49* (39) 3.1%	59* (60) 19.8%	108* (95) 2.3%	...	19487* (15373) 5.6%	40817* (41310) 15.6%	60304* (54177) 8.4%
23	...	...	47* (41) 19.4%	47* (41) .3%	...	...	47062* (40984) 22.6%	47062* (40984) 3.8%
24	...	...	12* (10) 11.5%	12* (10) .1%	...	...	27621* (22969) 29.9%	27621* (22969) 4.8%
25	...	...	3* (4) 2.7%	3* (4) .1%	...	...	20917* (22806) 17.0%	20917* (22806) 4.0%
26	...	...	38* (38) 18.0%	38* (38) .7%	...	...	56749* (48547) 27.4%	56749* (48547) 9.1%
27	65* (79) .4%	...	46* (26) 14.6%	111* (82) .5%	6147* (7481) 1.3%	...	88821* (30855) 25.7%	94967* (30723) 8.0%
28	39* (39) .6%	96* (91) 8.3%	210* (65) 55.3%	345* (130) 4.5%	1885* (1867) 1.0%	24810* (21282) 9.5%	357568* (96140) 75.1%	384263* (109888) 41.9%
29	...	35* (27) 11.8%	101* (42) 100.0%	136* (50) 9.7%	...	11069* (8773) 17.5%	117545* (70259) 100.0%	128614* (69792) 58.0%
30	...	...	78* (61) 35.0%	78* (61) .9%	...	...	112893* (65136) 48.3%	112893* (65136) 15.0%
31	...	...	...	...	...	...	...	...
32	...	18* (20) 1.7%	61* (36) 33.2%	79* (48) .8%	...	8209* (9255) 3.9%	39374* (28512) 30.5%	47584* (34052) 8.3%
33	...	49* (55) 3.4%	170* (54) 50.5%	219* (83) 3.7%	...	9209* (10249) 3.0%	412356 (67467) 66.3%	421565 (68457) 39.4%

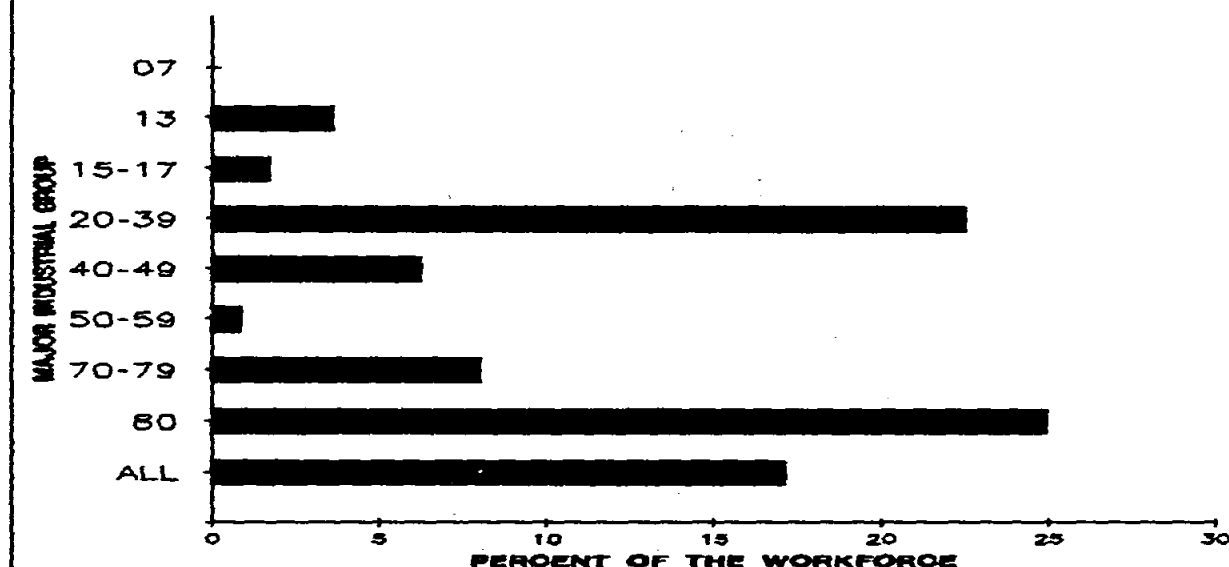
## NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983)

## TABLE NO. 111-2 (CONTINUED)

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	...	...	81* (62) 23.3%	81* (62) .4%	...	...	153738* (95642) 43.8%	153738* (95642) 10.2%
35	...	...	144* (50) 18.4%	144* (50) .5%	...	...	457463 (105592) 41.1%	457463 (105592) 19.2%
36	...	...	74 (11) 9.3%	74 (11) .7%	...	...	350384* (93980) 29.6%	350384* (93980) 17.8%
37	...	16* (22) 1.4%	226 (44) 54.3%	242 (46) 4.3%	...	4730* (6305) 2.0%	1258873 (263690) 83.1%	1263603 (263186) 67.2%
38	...	...	92* (80) 22.1%	92* (80) 2.3%	...	...	180896* (123271) 39.3%	180896* (123271) 23.8%
39	...	...	10* (10) 3.0%	10* (10) .1%	...	...	19466* (18968) 9.3%	19466* (18968) 3.7%
41	202* (210) 4.6%	...	...	202* (210) 4.1%	5865* (6101) 5.0%	...	...	5865* (6101) 2.9%
42	...	...	...	...	...	...	...	...
45	...	...	26* (14) 18.0%	26* (14) .7%	...	...	74937* (57710) 28.4%	74937* (57710) 16.6%
48	...	...	34* (21) 99.0%	34* (21) .2%	...	...	70083* (43687) 100.0%	70083* (43687) 10.4%
49	...	...	...	...	...	...	...	...
50	...	...	...	...	...	...	...	...
51	...	...	...	...	...	...	...	...
55	...	...	...	...	...	...	...	...
72	...	...	...	...	...	...	...	...
73	...	15* (13) 1.0%	34* (28) 9.8%	48* (29) .3%	...	7143* (6524) 2.0%	63615* (41134) 19.3%	70758* (40700) 6.4%
75	...	...	...	...	...	...	...	...
76	...	...	...	...	...	...	...	...
80	236* (168) 8.3%	772 (148) 35.7%	1192 (191) 57.8%	2200 (296) 31.1%	8654* (5963) 8.5%	211566 (40483) 39.6%	1962037 (259104) 64.9%	2182256 (267448) 59.6%
All	542* (292) .1%	1098 (186) 2.2%	2811 (248) 29.8%	4451 (480) .9%	22551* (11479) .2%	311830 (49496) 3.2%	6041750 (454144) 48.5%	6376131 (476077) 19.2%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE III - 3**  
**ON-SITE HEALTH UNITS WITH A NURSE IN CHARGE**  
**(NOES 1981-1988)**



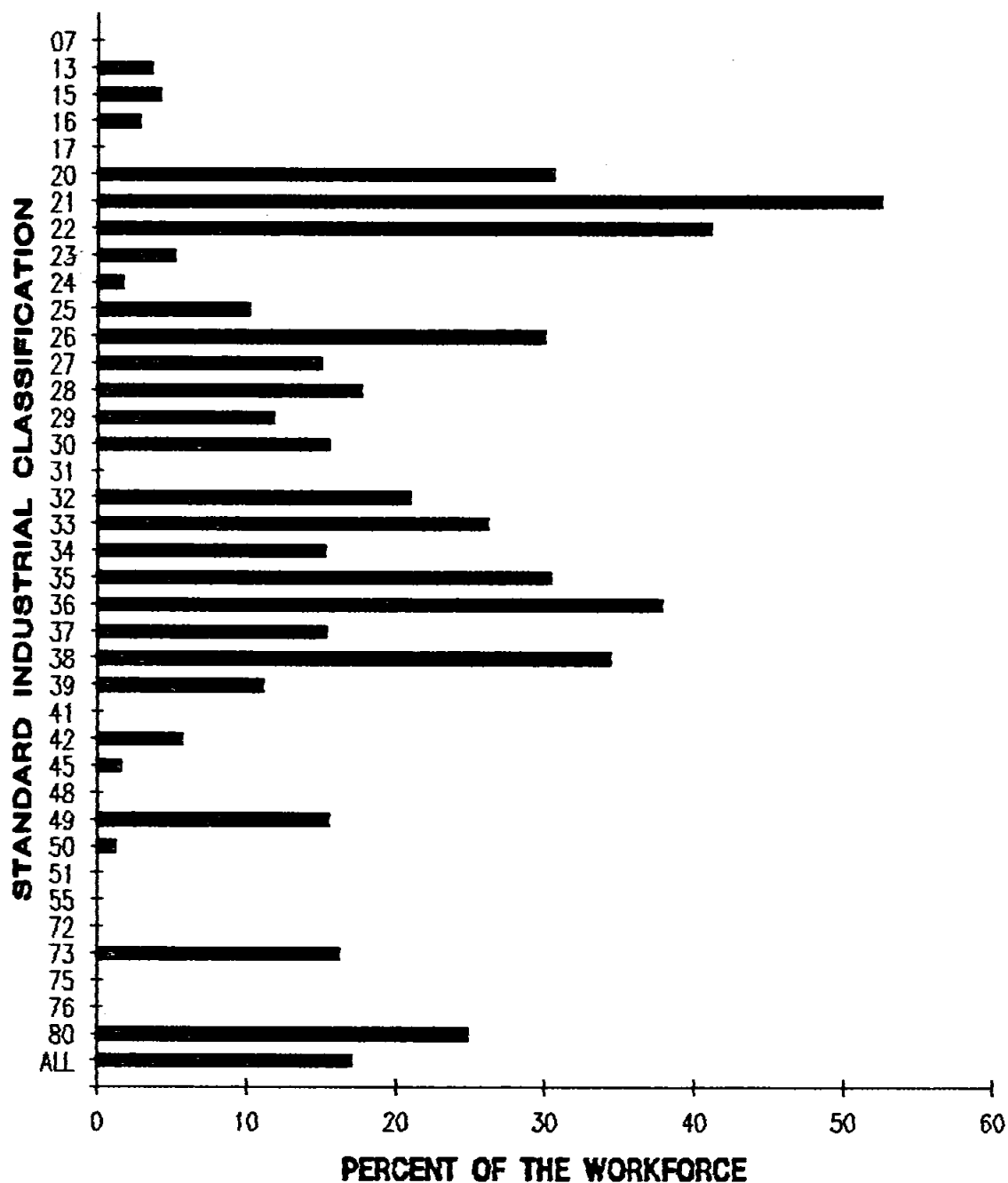
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-3

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 HAVE A HEALTH UNIT WITH A NURSE IN CHARGE

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	...	...	...	...	...	...	...	...
13	...	40* (31) 3.9%	...	40* (31) .4%	...	15189* (11898) 8.7%	...	15189* (11898) 3.7%
15-17	98* (98) .1%	7* (8) .2%	15* (6) 6.2%	120* (98) .1%	4694* (4688) .2%	2340* (2608) .3%	48961* (19213) 20.7%	55995* (21469) 1.8%
20-39	305* (173) .2%	3592 (639) 11.3%	3229 (263) 51.5%	7125 (807) 3.7%	15337* (6825) .3%	1040464 (177189) 16.3%	3295751 (241049) 39.9%	4351552 (324049) 22.6%
40-49	544* (460) 1.0%	345* (163) 5.9%	68* (69) 14.5%	957* (465) 1.6%	44320* (37385) 3.1%	72877* (36108) 6.3%	81780* (47203) 14.3%	198977* (73457) 6.3%
50-59	...	43* (27) 1.6%	...	43* (27) .1%	...	13054* (8272) 3.2%	...	13054* (8272) .9%
70-79	...	123* (73) 5.2%	171* (115) 48.3%	294* (121) .4%	...	35199* (20951) 7.6%	143637* (85153) 42.3%	178836* (82984) 8.1%
80	40* (40) 1.4%	304* (77) 14.0%	594 (139) 28.8%	939 (180) 13.3%	2061* (2054) 2.0%	86151* (25872) 16.1%	827750 (179847) 27.4%	915961 (184670) 25.0%
ALL	987* (503) .2%	4454 (670) 8.9%	4077 (326) 43.2%	9517 (963) 1.9%	66412* (38346) .6%	1265274 (184458) 12.8%	4397878 (316698) 35.3%	5729564 (389954) 17.1%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE III - 4**  
**ON-SITE HEALTH UNITS WITH A NURSE IN CHARGE**  
**(NOES 1981-1983)**



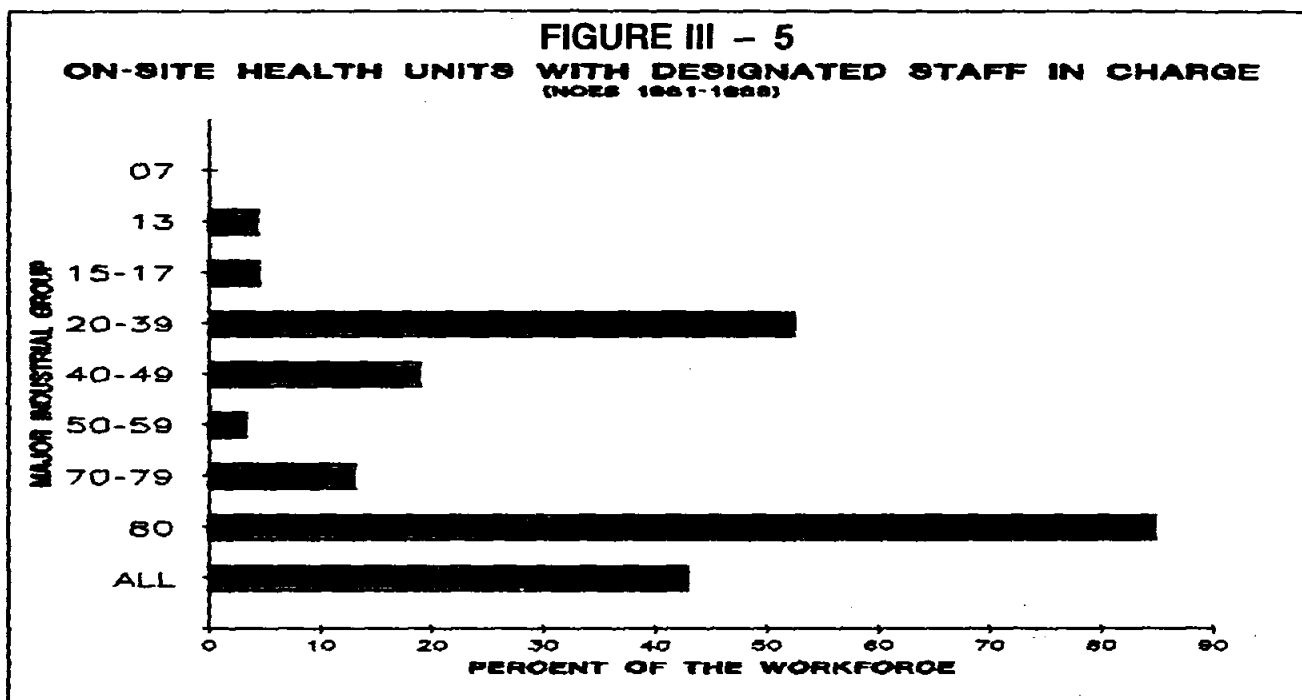
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
HAVE A HEALTH UNIT WITH A NURSE IN CHARGE

SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	...	...	...	...	...	...	...	...
13	...	40* (31) 3.9%	...	40* (31) .4%	...	15189* (11898) 8.7%	...	15189* (11898) 3.7%
15	...	7* (8) .6%	10* (4) 7.4%	17* (8) .1%	...	2340* (2608) 1.2%	36379* (12499) 27.0%	38719* (13228) 4.3%
16	98* (98) .9%	...	5* (4) 4.7%	103* (98) .8%	4694* (4688) 1.7%	...	12582* (11004) 12.4%	17276* (12193) 2.9%
17	...	...	...	...	...	...	...	...
20	...	411* (176) 12.8%	382 (81) 68.4%	793 (165) 5.2%	...	138978* (64906) 20.6%	337608 (76325) 68.7%	476586 (87852) 30.7%
21	4* (6) 14.6%	...	49* (34) 62.6%	54* (32) 49.4%	258* (345) 13.8%	...	59713* (43121) 53.3%	59971* (43053) 52.6%
22	161* (134) 5.5%	393* (145) 24.7%	196* (60) 65.5%	750* (233) 15.6%	5162* (3062) 4.9%	100666* (29427) 29.0%	188272* (79703) 72.1%	294100* (75051) 41.2%
23	...	25* (27) .8%	68* (55) 28.2%	93* (61) .6%	...	4511* (4786) .7%	61233* (53771) 29.4%	65744* (53926) 5.3%
24	...	9* (8) .8%	7* (8) 6.6%	16* (14) .1%	...	2141* (1963) 1.2%	8146* (9007) 8.8%	10287* (10339) 1.8%
25	...	26* (38) 2.4%	44* (34) 37.2%	70* (50) 1.3%	...	8307* (12149) 3.2%	45238* (36890) 36.8%	53544* (38353) 10.3%
26	...	140* (128) 8.9%	176* (75) 82.2%	316* (169) 5.4%	...	38115* (31375) 13.5%	150115* (69679) 72.6%	188230* (87389) 30.1%
27	...	24* (36) 1.3%	176* (86) 55.7%	201* (92) 1.0%	...	8252* (14242) 2.3%	170070* (67453) 49.2%	178322* (67397) 15.1%
28	...	240* (98) 20.7%	118* (66) 31.2%	358* (135) 4.6%	...	76727* (31305) 29.4%	86221* (47258) 18.1%	162948* (65872) 17.8%
29	...	107* (42) 36.5%	...	107* (42) 7.6%	...	26407* (9028) 41.7%	...	26407* (9028) 11.9%
30	...	34* (34) 2.2%	114* (52) 51.0%	148* (60) 1.7%	...	14201* (14825) 4.8%	103466* (42339) 44.3%	117667* (43890) 15.6%
31	...	...	...	...	...	...	...	...
32	...	116* (95) 11.5%	123* (61) 66.7%	239* (104) 2.4%	...	31572* (24390) 15.1%	89619* (43706) 69.5%	121191* (45740) 21.1%
33	82* (61) 2.0%	379* (112) 25.8%	124* (50) 36.7%	585* (150) 9.9%	5760* (4289) 4.2%	113382* (34751) 36.4%	162156* (51112) 26.1%	281298 (68364) 26.3%



SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	23* (23) .1%	465* (135) 14.9%	137* (55) 39.6%	625 (138) 2.8%	2203* (2221) .4%	121082* (34385) 20.3%	108420* (52305) 30.9%	231704* (66455) 15.4%
35	...	505* (134) 14.8%	556 (79) 70.9%	1061 (153) 4.0%	...	150515* (41772) 22.8%	574944 (96475) 51.7%	725460 (98993) 30.5%
36	...	359* (182) 13.4%	480* (133) 60.9%	839* (266) 7.9%	...	103625* (46870) 18.8%	641644 (116857) 54.3%	745270 (139188) 37.9%
37	34* (75) .8%	178* (68) 14.9%	168* (74) 40.4%	379* (119) 6.8%	1954* (4362) 1.5%	46681* (17578) 19.5%	242968* (80565) 16.0%	291603* (77164) 15.5%
38	...	54* (36) 5.7%	284* (138) 68.3%	338* (149) 8.3%	...	16839* (12733) 8.7%	245387* (138152) 53.3%	262226* (141621) 34.5%
39	...	127* (252) 15.9%	26* (26) 7.7%	153* (252) 2.0%	...	38461* (80875) 25.7%	20532* (20670) 9.8%	58993* (83181) 11.2%
41	...	...	...	...	...	...	...	...
42	91* (71) .5%	48* (59) 3.2%	17* (12) 20.3%	155* (94) .7%	8058* (6284) 1.7%	17956* (22209) 6.9%	21871* (17464) 29.2%	47885* (27827) 5.8%
45	...	75* (75) 12.8%	...	75* (75) 1.9%	...	7769* (7769) 7.1%	...	7769* (7769) 1.7%
48	...	...	...	...	...	...	...	...
49	453* (396) 5.5%	134* (122) 7.2%	51* (69) 29.7%	638* (425) 6.2%	36262* (31700) 13.5%	34845* (27857) 8.2%	59909* (46023) 40.9%	131016* (66208) 15.6%
50	...	43* (27) 2.4%	...	43* (27) .1%	...	13054* (8272) 4.6%	...	13054* (8272) 1.4%
51	...	...	...	...	...	...	...	...
55	...	...	...	...	...	...	...	...
72	...	...	...	...	...	...	...	...
73	...	123* (73) 8.3%	171* (115) 50.2%	294* (121) 1.6%	...	35199* (20951) 10.1%	143637* (85153) 43.7%	178836* (82984) 16.3%
75	...	...	...	...	...	...	...	...
76	...	...	...	...	...	...	...	...
80	40* (40) 1.4%	304* (77) 14.0%	594 (139) 28.8%	939 (180) 13.3%	2061* (2054) 2.0%	86151* (25872) 16.1%	827750 (179847) 27.4%	915961 (184670) 25.0%
All	987* (497) .2%	4366 (569) 8.8%	4077 (325) 43.3%	9429 (811) 1.9%	66412* (36996) .6%	1252968 (163335) 12.8%	4397878 (312840) 35.3%	5717258 (368249) 17.2%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.



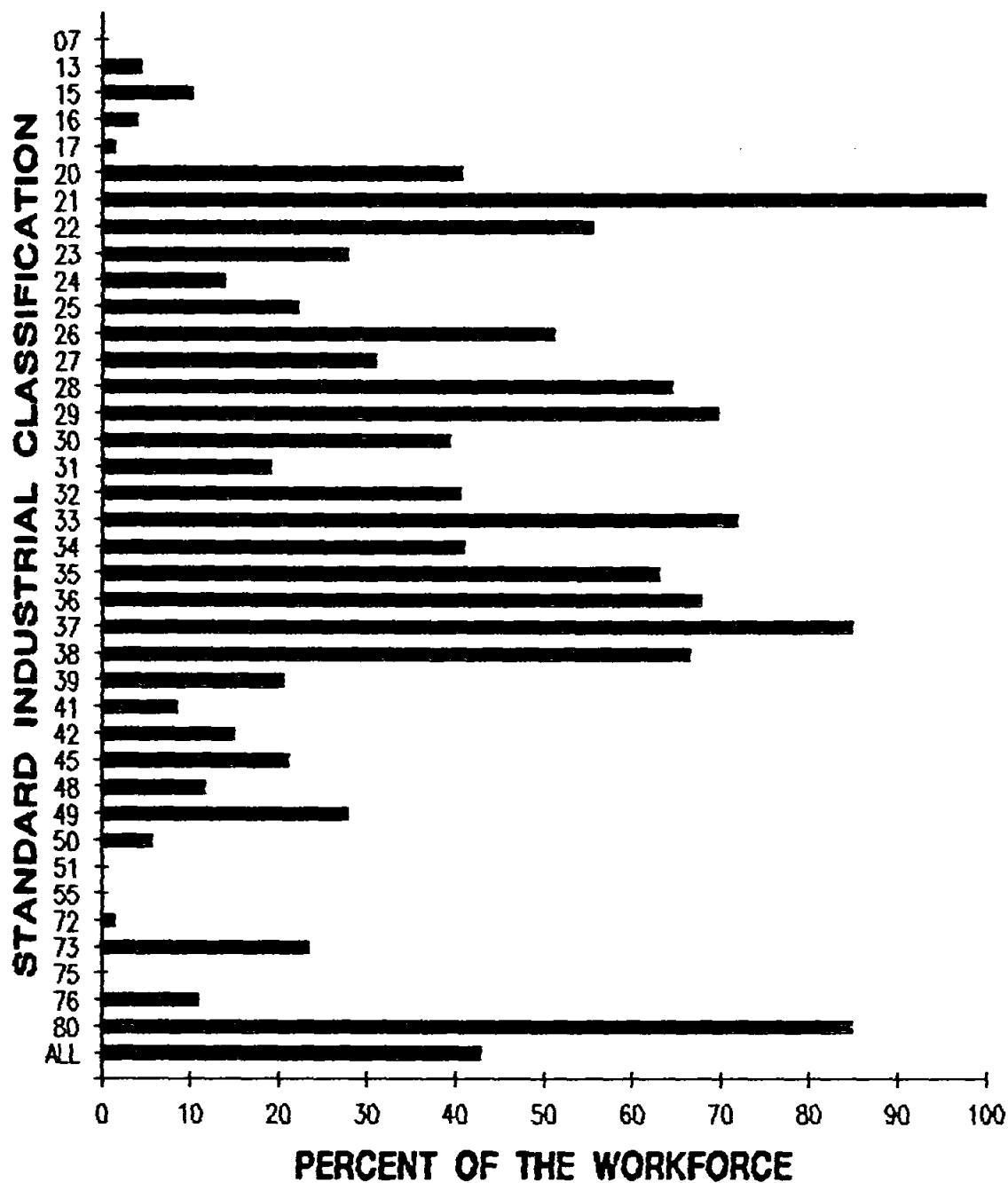
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-5

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
HAVE A HEALTH UNIT WITH DESIGNATED STAFF IN CHARGE

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	...	...	...	...	...	...	...	...
13	157* (159) 1.8%	40* (31) 3.9%	...	197* (156) 2.0%	3922* (3964) 1.9%	15189* (11898) 8.7%	...	19112* (11903) 4.6%
15-17	740* (379) .8%	55* (56) 1.3%	77* (94) 31.9%	872* (407) .9%	34539* (16235) 1.6%	8393* (7618) 1.1%	101207* (66552) 42.9%	144140* (70764) 4.7%
20-39	4951 (842) 3.2%	9963 (834) 31.4%	5088 (237) 81.1%	20002 (1404) 10.5%	252842 (39365) 5.5%	2445203 (205813) 38.3%	7446208 (324452) 90.1%	10144254 (443378) 52.7%
40-49	1925* (838) 3.6%	889* (307) 15.2%	194* (83) 41.5%	3008* (940) 5.1%	94795* (43549) 6.6%	223660* (75206) 19.4%	288587 (64537) 50.3%	607042 (115478) 19.2%
50-59	426* (391) .7%	308* (143) 11.6%	...	734* (348) 1.2%	9375* (8598) .8%	44396* (20217) 10.9%	...	53771* (18322) 3.5%
70-79	183* (141) .3%	276* (111) 11.8%	205* (119) 57.8%	663* (217) .9%	10074* (7746) .7%	74803* (30290) 16.1%	207252* (104011) 61.0%	292129* (101233) 13.3%
80	276* (177) 9.7%	1127 (158) 52.0%	1786 (266) 86.7%	3189 (340) 45.1%	10714* (6459) 10.5%	311947 (46043) 58.4%	2789787 (341627) 92.3%	3112447 (342145) 85.1%
ALL	8658 (1335) 1.9%	12657 (923) 25.3%	7350 (396) 77.9%	28665 (1825) 5.6%	416261 (62458) 3.8%	3123591 (227290) 31.7%	10833041 (491315) 86.9%	14372894 (585419) 43.0%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
...No facilities observed.

**FIGURE III - 6**  
**ON-SITE HEALTH UNITS WITH DESIGNATED STAFF IN CHARGE**  
**(NOES 1981-1983)**



NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
HAVE A HEALTH UNIT WITH DESIGNATED STAFF IN CHARGE

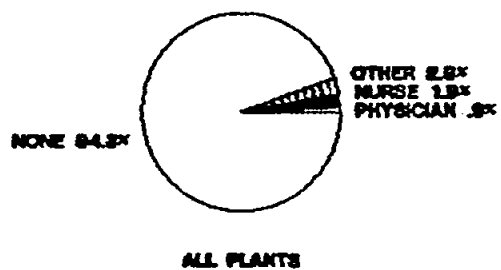
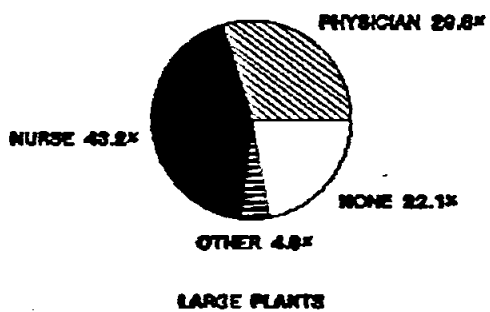
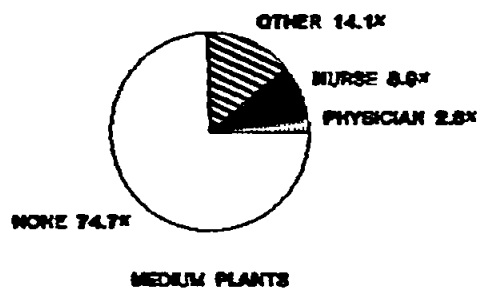
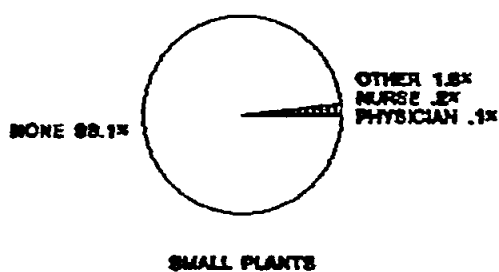
SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	...	...	...	...	...	...	...	...
13	157* (159) 1.8%	40* (31) 3.9%	...	197* (156) 2.0%	3922* (3964) 1.9%	15189* (11898) 8.7%	...	19112* (11903) 4.6%
15	33* (49) .1%	7* (8) .6%	72* (95) 53.5%	113* (108) .4%	2407* (3547) .4%	2340* (2608) 1.2%	88625* (66889) 65.7%	93373* (66804) 10.4%
16	159* (118) 1.4%	48* (55) 4.3%	5* (4) 4.7%	212* (136) 1.7%	6236* (5060) 2.2%	6054* (6955) 2.9%	12582* (11004) 12.4%	24872* (14257) 4.2%
17	547* (380) .9%	...	...	547* (380) .9%	25895* (16247) 2.1%	...	...	25895* (16247) 1.6%
20	177* (172) 1.5%	752* (200) 23.4%	441 (90) 78.8%	1369 (283) 9.0%	6964* (6806) 1.8%	216845* (63456) 32.2%	411613 (84030) 83.7%	635422 (88869) 40.9%
21	30* (43) 100.0%	...	79* (56) 99.6%	109* (65) 100.0%	1866* (2685) 100.0%	...	112133* (67572) 100.0%	113999* (66861) 100.0%
22	320* (159) 10.9%	615 (118) 38.7%	255* (65) 85.2%	1190 (237) 24.7%	15921* (7270) 15.0%	152995 (32172) 44.1%	229089* (81745) 87.7%	398005 (93457) 55.7%
23	405* (137) 3.2%	713 (169) 23.0%	153* (68) 63.3%	1272 (185) 8.0%	18281* (8441) 4.3%	177138 (38332) 29.0%	151296* (65830) 72.6%	346716 (66698) 27.9%
24	279* (216) 2.6%	245* (120) 21.3%	19* (8) 18.1%	543* (235) 4.5%	10764* (7249) 3.5%	34647* (17496) 18.9%	35767* (18789) 38.7%	81178* (28132) 14.0%
25	144* (132) 3.5%	124* (114) 11.6%	47* (33) 39.9%	315* (212) 5.9%	10427* (9361) 7.5%	39048* (38570) 15.2%	66155* (34507) 53.8%	115629* (46862) 22.3%
26	95* (86) 2.3%	438* (195) 27.9%	214* (73) 100.0%	748* (240) 12.7%	6444* (5817) 4.7%	108284* (50101) 38.5%	206864* (65220) 100.0%	321593* (93466) 51.4%
27	235* (154) 1.3%	341* (141) 18.2%	238* (91) 75.2%	814* (207) 4.0%	13831* (8936) 2.9%	80496* (34925) 22.3%	274109 (66517) 79.3%	368435 (73540) 31.1%
28	164* (101) 2.7%	438* (137) 37.7%	345 (63) 90.7%	946 (165) 12.3%	7524* (4419) 4.2%	132416* (36905) 50.8%	454264 (99596) 95.4%	594203 (105460) 64.7%
29	...	141* (49) 48.3%	101* (42) 100.0%	243* (69) 17.3%	...	37477* (12815) 59.2%	117545* (70259) 100.0%	155022* (71575) 69.9%
30	224* (96) 3.3%	238* (89) 15.5%	193* (74) 86.0%	654 (156) 7.7%	16150* (6845) 7.2%	65646* (30101) 22.3%	216359* (74266) 92.6%	298155* (79761) 39.6%
31	...	125* (80) 22.0%	...	125* (80) 8.2%	...	33930* (22833) 25.0%	...	33930* (22833) 19.3%
32	242* (156) 2.8%	372* (133) 36.8%	184* (71) 99.9%	798* (232) 8.0%	11886* (7303) 5.0%	94060* (37024) 45.0%	128993* (49687) 100.0%	234939 (54089) 40.8%
33	236* (131) 5.7%	658 (164) 44.8%	304 (72) 90.1%	1198 (268) 20.2%	14590* (10318) 10.5%	167371 (34227) 53.8%	589839 (89977) 94.9%	771800 (105407) 72.1%

SIC CODE					EMPLOYEES			
	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	1069* (427) 5.8%	1085 (215) 34.7%	298* (79) 86.1%	2452 (484) 11.2%	38396* (10340) 6.9%	261704 (48385) 43.9%	318552* (103010) 90.7%	618652 (127634) 41.2%
35	520* (272) 2.3%	1709 (255) 50.2%	767 (85) 97.9%	2996 (386) 11.2%	24146* (8768) 4.0%	380854 (42814) 57.6%	1099864 (150347) 98.8%	1504864 (163096) 63.2%
36	403* (206) 5.7%	1015 (175) 37.8%	625* (164) 79.4%	2043 (366) 19.3%	31239* (15080) 13.6%	260357 (32935) 47.1%	1045947 (196047) 88.5%	1337543 (210419) 68.0%
37	137* (110) 3.5%	416* (129) 35.0%	394 (85) 94.7%	947 (161) 17.0%	7202* (6638) 5.7%	89216* (28348) 37.3%	1501841 (240377) 99.2%	1598259 (249013) 85.0%
38	105* (89) 3.9%	312* (123) 32.6%	396* (130) 95.1%	812 (191) 20.0%	7954* (7109) 7.6%	52866* (25781) 27.2%	445979* (125897) 96.9%	506798 (126678) 66.7%
39	165* (197) 2.5%	227* (360) 28.4%	36* (26) 10.7%	428* (416) 5.6%	9258* (11005) 5.6%	59854* (101830) 40.0%	39998* (24337) 19.1%	109110* (100263) 20.8%
41	475* (289) 10.8%	...	...	475* (289) 9.6%	17337* (10921) 14.7%	...	...	17337* (10921) 8.7%
42	737* (377) 3.7%	154* (106) 10.4%	49* (37) 59.4%	939* (418) 4.3%	32111* (13372) 6.6%	38478* (28653) 14.9%	54578* (44519) 72.9%	125167* (57096) 15.2%
45	...	75* (75) 12.8%	30* (15) 20.3%	105* (82) 2.6%	...	7769* (7769) 7.1%	88689* (45201) 33.6%	96458* (44062) 21.4%
48	260* (256) 1.8%	5* (5) .6%	34* (21) 99.0%	298* (255) 1.9%	9084* (8973) 2.1%	1002* (903) .6%	70083* (43687) 100.0%	80169* (43506) 11.9%
49	453* (396) 5.5%	444* (213) 23.9%	82* (89) 47.4%	980* (539) 9.6%	36262* (31700) 13.5%	125261* (58890) 29.4%	75237* (54990) 51.3%	236760* (103580) 28.1%
50	426* (391) 1.4%	308* (143) 17.1%	...	734* (348) 2.3%	9375* (8598) 1.5%	44396* (20217) 15.7%	...	53771* (18322) 5.9%
51	...	...	...	...	...	...	...	...
55	...	...	...	...	...	...	...	...
72	...	54* (55) 8.0%	...	54* (55) .3%	...	8242* (6268) 10.0%	...	8242* (6268) 1.7%
73	...	186* (93) 12.5%	205* (119) 60.0%	390* (133) 2.1%	...	53888* (25923) 15.4%	207252* (104011) 63.0%	261140* (102006) 23.7%
75	...	...	...	...	...	...	...	...
76	183* (141) 1.9%	36* (45) 29.4%	...	219* (147) 2.2%	10074* (7746) 5.6%	12672* (15755) 52.1%	...	22746* (17391) 11.2%
80	276* (177) 9.7%	1127 (158) 52.0%	1786 (266) 86.7%	3189 (340) 45.1%	10714* (6459) 10.5%	311947 (46043) 58.4%	2789787 (341627) 92.3%	3112447 (342145) 85.1%
All	8658 (1320) 1.9%	12494 (835) 25.2%	7350 (507) 78.0%	28502 (1656) 5.6%	416261 (63141) 3.8%	3088048 (188964) 31.6%	10833041 (536586) 86.9%	14337351 (548663) 43.1%

\*Standard error &gt;25% of the estimate. The estimate may be unreliable.

...No facilities observed.

**FIGURE III - 7**  
**ON-SITE HEALTH UNITS BY PERSONNEL TYPE IN CHARGE**  
**(NOES 1981-1983)**



**NOES QUESTIONNAIRE ITEM NO. 15**  
**Presence of a Trained Individual to Provide First Aid**

**Intent**

The intent of this question was to determine if there were individuals, other than doctors or nurses, formally trained in first aid procedures and designated by management to provide on-site emergency medical care.

This item was displayed on the questionnaire as:

15. Do you have an employee at this facility with formal first-aid training, who has been formally designated to provide emergency medical treatment?

1 Yes, full-time

2 Yes, part-time

3 No

**Notes**

Full-time provision of first-aid means that at least one individual is on duty at any time the facility is in operation, while part-time means that at least one individual has been designated as the provider of first-aid but may not be on duty during all hours of operation.

Physicians, nurses, or any individual not formally designated by management to provide first aid were not included as providers. Informal or "understood" arrangements were not considered positive responses.

**Analysis**

Three analyses of the responses to question 15 are presented.

- (1) Response 15.1 - provision of trained first aid personnel during all hours of facility operation

The estimates of the plants which provide full-time first aid personnel, and workers in those plants (by number and proportion of the totals) are displayed in Figures III-8 and III-9, and Tables III-7 and III-8.

Figure III-8 Full-time emergency health care personnel on-site  
(by major industrial group)

Figure III-9 Full-time emergency health care personnel on-site  
(by 2-digit SIC)

Table III-7 Number and percent of plants and employees in plants  
which have full-time personnel for emergency health care  
(by major industrial group)

Table III-8 Number and percent of plants and employees in plants  
which have full-time personnel for emergency health care  
(by 2-digit SIC)

- (2) Response 15.2 - provision of trained first aid personnel during at least some of the hours of facility operation

The estimates of the plants which provide part-time first aid personnel, and workers in those plants (by number and proportion of the totals) are displayed in Figures III-10 and III-11, and Tables III-9 and III-10.

Figure III-10	Part-time emergency health care personnel on-site (by major industrial group)
Figure III-11	Part-time emergency health care personnel on-site (by 2-digit SIC)
Table III-9	Number and percent of plants and employees in plants which have part-time personnel for emergency health care (by major industrial group)
Table III-10	Number and percent of plants and employees in plants which have part-time personnel for emergency health care (by 2-digit SIC)

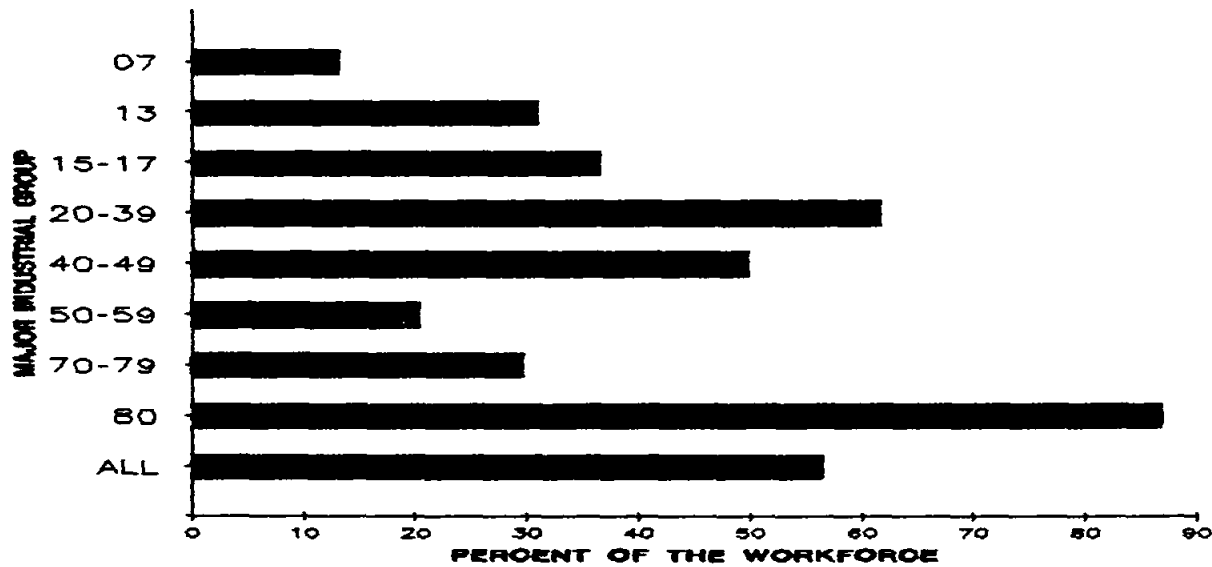
- (3) Response 15.1 or 15.2 - provision of trained first aid personnel on a part or full-time basis

The estimates of the plants which provide emergency health care on-site either part or full-time, and workers in those plants (by number and proportion of the totals) are displayed in Figures III-12, III-13, III-14, and Table III-11 and III-12.

Figure III-12	Emergency health care personnel on-site (by major industrial group)
Figure III-13	Emergency health care personnel on-site (by 2-digit SIC)
Figure III-14	Emergency health care provided on-site
Table III-11	Number and percent of plants and employees in plants which have designated personnel for emergency health care (by major industrial group)
Table III-12	Number and percent of plants and employees in plants which have designated personnel for emergency health care (by 2-digit SIC)



**FIGURE III - 8**  
**FULL-TIME EMERGENCY HEALTH CARE PERSONNEL ON-SITE**  
**(NOES 1981-1988)**



NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-7

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 HAVE FULL-TIME PERSONNEL FOR EMERGENCY HEALTH CARE

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	1057* (627) 19.0%	...	...	1057* (627) 18.8%	14762* (8467) 14.2%	...	...	14762* (8467) 13.3%
13	2682* (1057) 31.2%	390* (183) 38.3%	...	3071* (1113) 31.8%	45878* (15085) 22.0%	83058* (37050) 47.8%	...	128937* (48187) 31.1%
15-17	28648 (1912) 30.4%	1546* (457) 37.3%	165* (113) 68.0%	30358 (2030) 30.8%	669335 (48676) 31.9%	292221* (95461) 39.6%	165112* (84357) 69.9%	1126669 (144742) 36.7%
20-39	42683 (3278) 27.9%	17677 (1336) 55.7%	4917 (243) 78.4%	65276 (4006) 34.1%	1567020 (107240) 33.9%	3683300 (276631) 57.7%	6680877 (302274) 80.8%	11931197 (433549) 61.9%
40-49	14047 (1483) 26.4%	3269 (797) 55.9%	321* (95) 68.7%	17638 (1911) 29.7%	457041 (62636) 31.9%	702044* (195742) 60.9%	424120 (98892) 73.9%	1583205 (251349) 50.1%
50-59	9592 (1526) 16.4%	691* (246) 26.0%	...	10283 (1594) 16.8%	209466 (31780) 18.6%	107008* (37279) 26.2%	...	316474 (51722) 20.6%
70-79	9308 (1662) 12.7%	947 (200) 40.4%	232* (125) 65.5%	10487 (1673) 13.8%	230725 (36155) 16.6%	199221 (34001) 42.9%	225760* (108215) 66.5%	655706 (118696) 29.8%
80	2463* (784) 86.7%	1503 (197) 69.4%	1739 (230) 84.4%	5704 (835) 80.7%	80804* (22339) 79.5%	423030 (65341) 79.1%	2680541 (307985) 88.7%	3184375 (312348) 87.0%
ALL	110480 (4880) 24.6%	26022 (1674) 52.0%	7374 (386) 78.1%	143876 (5612) 28.3%	3275032 (144598) 29.6%	5489882 (363511) 55.7%	10176410 (463498) 81.6%	18941324 (623546) 56.7%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

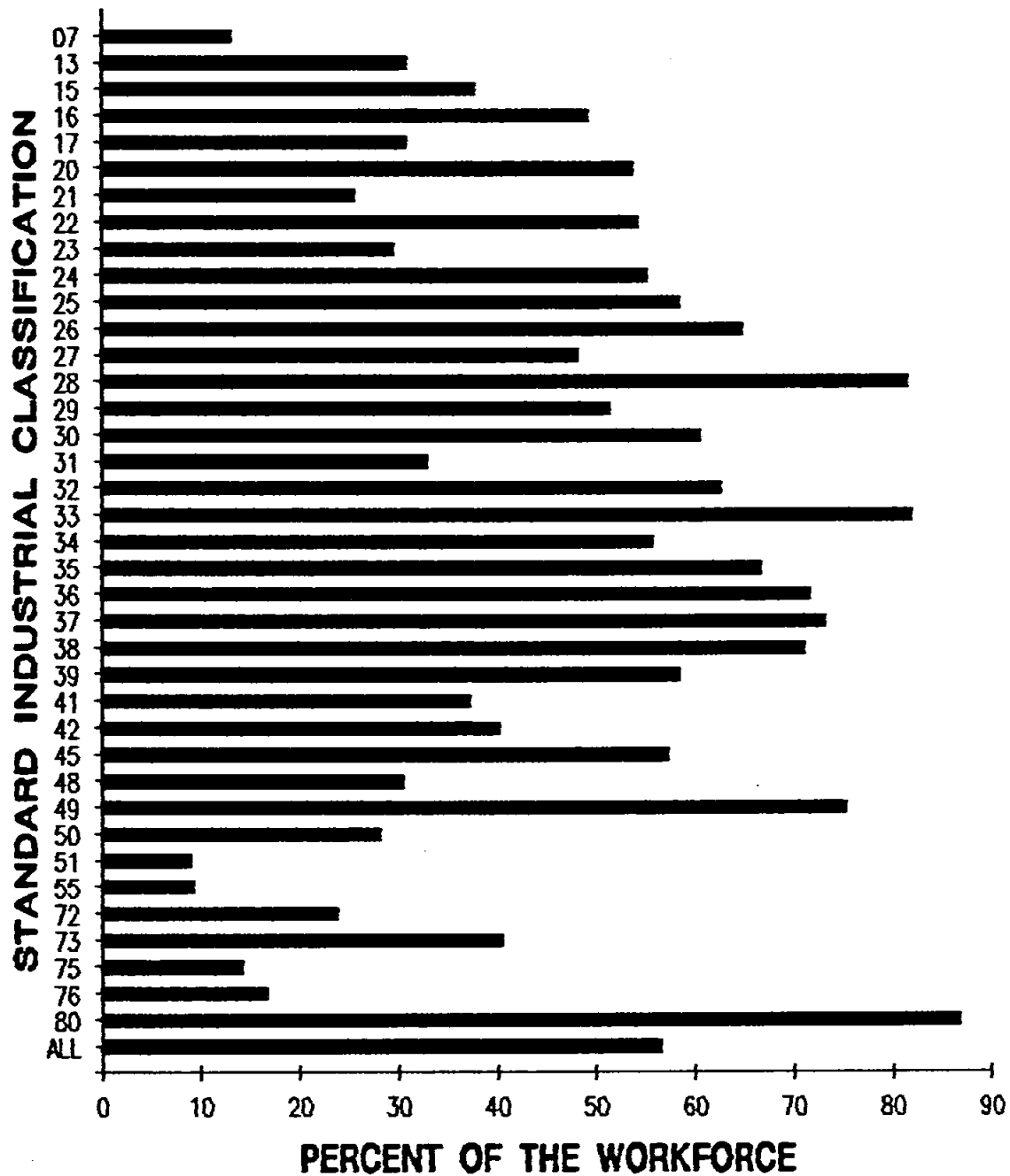
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
HAVE FULL-TIME PERSONNEL FOR EMERGENCY HEALTH CARE

SIC CODE	PLANTS			TOTAL	EMPLOYEES			TOTAL
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)		SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	
07	1057* (627) 19.0%	...	...	1057* (627) 18.8%	14762* (8467) 14.2%	...	...	14762* (8467) 13.3%
13	2682* (1057) 31.2%	390* (183) 38.3%	...	3071* (1113) 31.8%	45878* (15085) 22.0%	83058* (37050) 47.8%	...	128937* (48187) 31.1%
15	8964 (1206) 36.0%	270* (114) 24.4%	106* (98) 78.8%	9341 (1213) 35.7%	190997 (25721) 33.9%	46260* (20017) 23.3%	103397* (67194) 76.7%	340654 (80982) 38.0%
16	5138 (896) 45.5%	561* (194) 50.1%	58* (40) 54.4%	5757 (977) 46.0%	133211 (24819) 46.9%	98192* (39941) 47.3%	61714* (37366) 60.9%	293117 (73055) 49.4%
17	14546 (1657) 25.0%	715* (360) 37.2%	...	15261 (1751) 25.4%	345128 (38991) 27.6%	147770* (74449) 44.6%	...	492898 (85896) 31.1%
20	2631 (540) 23.1%	1702 (321) 52.9%	389 (88) 69.6%	4722 (696) 31.1%	98503 (21713) 25.4%	384302 (81464) 57.0%	356899 (76705) 72.6%	839704 (93253) 54.0%
21	4* (6) 14.6%	...	10* (19) 12.2%	14* (16) 12.9%	258* (345) 13.8%	...	29132* (29367) 26.0%	29390* (29240) 25.8%
22	589* (213) 20.1%	688 (147) 43.3%	201* (78) 67.2%	1478 (281) 30.7%	38424* (10595) 36.2%	151085 (37170) 43.5%	199624* (97792) 76.5%	389133* (111649) 54.5%
23	2451* (1157) 19.6%	1003* (285) 32.3%	100* (57) 41.4%	3554* (1189) 22.4%	64517* (20104) 15.2%	216446* (58927) 35.5%	89384* (46992) 42.9%	370347 (73299) 29.8%
24	3018 (584) 28.2%	636* (161) 55.4%	104* (74) 100.0%	3758 (626) 31.4%	123390 (26160) 40.6%	105583* (27166) 57.5%	92355* (52501) 100.0%	321328 (62748) 55.4%
25	1551* (509) 37.2%	552* (170) 52.0%	119* (75) 99.6%	2221* (629) 41.6%	55629* (20588) 40.0%	125792* (52172) 49.1%	122998* (62394) 100.0%	304419* (89059) 58.7%
26	1531* (497) 37.2%	820* (224) 52.3%	180* (85) 84.2%	2531 (583) 42.9%	65111 (15960) 47.3%	156627* (40473) 55.6%	184857* (74073) 89.4%	406595 (91415) 65.0%
27	2934 (682) 16.2%	734* (197) 39.2%	259* (92) 81.9%	3927 (851) 19.3%	108333 (23046) 22.7%	165027* (46466) 45.7%	300531* (75636) 86.9%	573891 (106893) 48.4%
28	2200 (498) 35.6%	901 (140) 77.7%	359 (57) 94.4%	3460 (528) 44.9%	71729 (11497) 39.7%	214209 (42523) 82.1%	464663 (96615) 97.5%	750601 (101927) 81.8%
29	73* (87) 7.2%	61* (39) 20.8%	94* (40) 93.4%	229* (101) 16.3%	6668* (7929) 16.3%	15820* (9486) 25.0%	92134* (54777) 78.4%	114622* (55892) 51.7%
30	2415* (707) 36.0%	833* (235) 54.2%	158* (67) 70.4%	3405 (786) 40.2%	97032 (20429) 43.1%	168089* (45955) 57.1%	192647* (73035) 82.5%	457767 (86121) 60.8%
31	88* (61) 9.5%	229* (112) 40.2%	...	317* (135) 20.8%	5104* (3905) 20.5%	53269* (27366) 39.3%	...	58373* (28325) 33.2%
32	3469 (612) 39.4%	578* (158) 57.1%	184* (71) 99.9%	4231 (654) 42.3%	112568 (15774) 47.5%	119525* (34273) 57.2%	128993* (49687) 100.0%	361087 (52695) 62.8%
33	1208 (297) 29.2%	1340 (135) 91.3%	275* (76) 81.5%	2823 (329) 47.5%	45215 (10299) 32.7%	286613 (29274) 92.1%	547051 (103308) 88.0%	878879 (103529) 82.1%

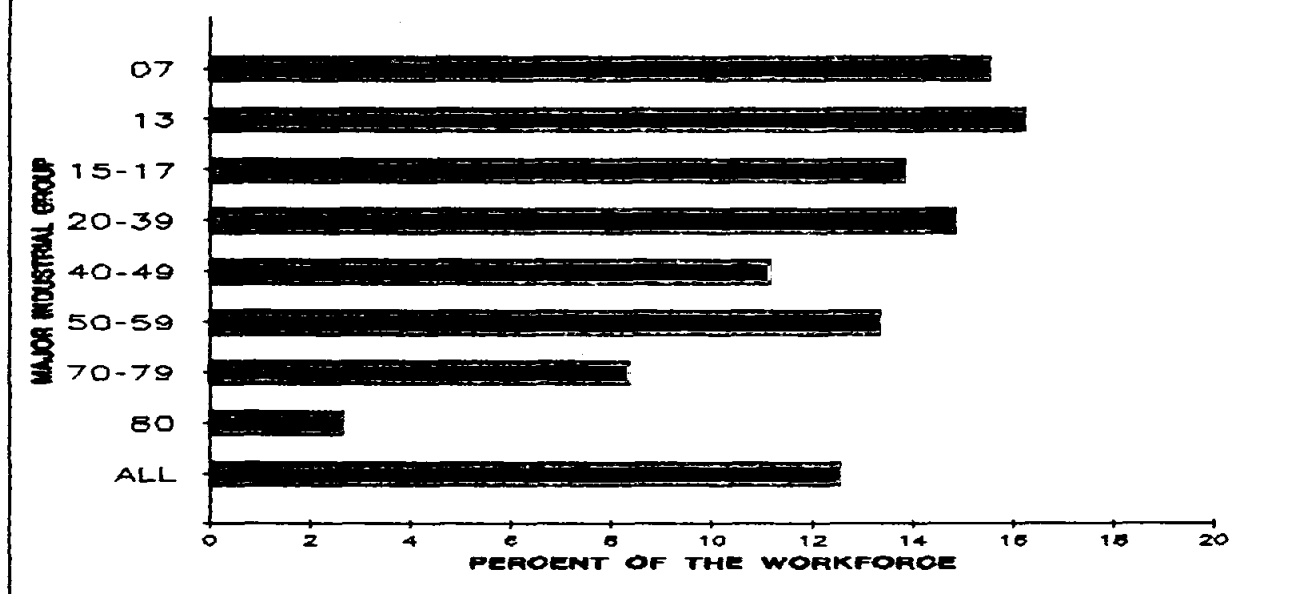
SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	6430 (793) 34.7%	1992 (235) 63.8%	279* (82) 80.7%	8701 (801) 39.6%	210538 (23343) 37.9%	380972 (44614) 63.8%	249602* (90524) 71.1%	841112 (96946) 56.0%
35	6149 (766) 27.1%	2198 (228) 64.6%	616 (87) 78.6%	8964 (773) 33.4%	209055 (28691) 34.5%	423204 (45035) 64.0%	959414 (147206) 86.2%	1591673 (149365) 66.9%
36	1564 (344) 22.0%	1681 (131) 62.6%	610 (143) 77.5%	3855 (412) 36.4%	79605 (14556) 34.5%	389504 (29064) 70.5%	943256 (157386) 79.8%	1412364 (147178) 71.9%
37	1865 (414) 47.0%	743 (144) 62.4%	334 (73) 80.3%	2942 (435) 52.7%	73873 (18153) 58.2%	151178 (34242) 63.2%	1155117 (213608) 76.3%	1380168 (206585) 73.4%
38	847* (244) 31.5%	692 (165) 72.3%	319* (113) 76.7%	1858 (316) 45.7%	44160* (12285) 42.2%	115218* (33031) 59.3%	382315* (116695) 83.0%	541693 (123153) 71.3%
39	1666* (477) 25.4%	294* (487) 36.8%	328* (217) 97.0%	2288* (633) 29.8%	57309 (12259) 34.5%	60837* (96601) 40.7%	189904* (119941) 90.7%	308049* (120292) 58.7%
41	2240* (780) 50.7%	97* (83) 19.0%	...	2337* (800) 47.4%	63005* (22058) 53.6%	11518* (9829) 14.1%	...	74523* (25939) 37.4%
42	3118* (840) 15.6%	936* (269) 63.2%	79* (53) 96.5%	4133 (908) 19.1%	89493 (17911) 18.3%	168940* (52404) 65.3%	73400* (49222) 98.1%	331834 (75728) 40.4%
45	785* (573) 24.2%	118* (118) 20.0%	103* (47) 70.2%	1006* (592) 25.3%	18125* (12967) 23.4%	47505* (47505) 43.5%	193557* (76002) 73.2%	259187* (98998) 57.5%
48	2404* (1068) 16.3%	398* (201) 44.1%	19* (16) 56.8%	2821* (1079) 18.0%	98068* (60804) 23.0%	71314* (32341) 40.4%	37029* (29526) 52.8%	206411* (76790) 30.7%
49	4126* (1076) 50.2%	1578* (563) 84.8%	120* (90) 69.2%	5824 (1440) 56.8%	143667* (41048) 53.3%	371051* (151932) 87.2%	120133* (61318) 82.0%	634851* (180027) 75.5%
50	6345 (1103) 20.9%	691* (246) 38.4%	...	7037 (1199) 21.9%	151743 (28192) 24.1%	107008* (37279) 37.8%	...	258751 (53427) 28.3%
51	1239* (345) 13.6%	...	...	1239* (345) 13.3%	19569* (7015) 10.6%	...	...	19569* (7015) 9.2%
55	2007* (1047) 10.6%	...	...	2007* (1047) 10.3%	38155* (19623) 12.3%	...	...	38155* (19623) 9.4%
72	2332* (785) 11.3%	175* (106) 25.9%	13* (19) 100.0%	2520* (766) 11.8%	76444* (26382) 20.1%	26292* (17071) 32.0%	10670* (15114) 100.0%	113406* (35672) 24.0%
73	2978 (678) 18.0%	677 (160) 45.5%	219* (117) 64.1%	3873 (711) 21.0%	80546* (21876) 19.1%	152019 (30728) 43.5%	215090* (102847) 65.4%	447654 (108380) 40.7%
75	3432* (1500) 13.1%	59* (60) 99.7%	...	3490* (1500) 13.3%	52290* (21866) 12.7%	8238* (8380) 100.0%	...	60528* (23319) 14.4%
76	567* (336) 5.8%	36* (45) 29.4%	...	603* (333) 6.1%	21445* (12821) 12.0%	12672* (15755) 52.1%	...	34118* (19353) 16.8%
80	2463* (784) 86.7%	1503 (197) 69.4%	1739 (230) 84.4%	5704 (835) 80.7%	80804* (22339) 79.5%	423030 (65341) 79.1%	2680541 (307985) 88.7%	3184375 (312348) 87.0%
All	109105 (3713) 24.4%	25880 (1241) 52.2%	7374 (383) 78.2%	142359 (4191) 28.2%	3230349 (116585) 29.3%	5458166 (280425) 55.8%	10176410 (472819) 81.7%	18864925 (559804) 56.7%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE III - 9**  
**FULL TIME EMERGENCY HEALTH CARE PERSONNEL ON-SITE**  
**(NOES 1981-1983)**



**FIGURE III - 10**  
**PART-TIME EMERGENCY HEALTH CARE PERSONNEL ON-SITE**  
**(NOES 1981-1983)**



NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-9

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 HAVE PART-TIME PERSONNEL FOR EMERGENCY HEALTH CARE

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	1196* (674) 21.5%	...	...	1196* (674) 21.2%	17279* (6820) 16.7%	...	...	17279* (6820) 15.6%
13	310* (198) 3.6%	111* (63) 10.9%	46* (52) 100.0%	467* (200) 4.8%	12854* (6824) 6.2%	23186* (11620) 13.3%	31383* (35291) 100.0%	67423* (37709) 16.3%
15-17	7722* (2155) 8.2%	715* (262) 17.2%	54* (49) 22.3%	8490* (2285) 8.6%	230853* (73305) 11.0%	139575* (55238) 18.9%	55765* (38584) 23.6%	426193* (120219) 13.9%
20-39	15119 (1763) 9.9%	6940 (840) 21.9%	898 (139) 14.3%	22957 (2291) 12.0%	546397 (49687) 11.8%	1469060 (182323) 23.0%	851606 (117593) 10.3%	2867063 (263660) 14.9%
40-49	4202 (1034) 7.9%	839* (237) 14.3%	20* (12) 4.2%	5060 (988) 8.5%	126232* (32163) 8.8%	153057 (37583) 13.3%	74385* (52484) 13.0%	353674 (68747) 11.2%
50-59	6513 (1470) 11.2%	295* (186) 11.1%	...	6808 (1460) 11.2%	135890 (27277) 12.1%	69192* (48098) 16.9%	...	205082* (53038) 13.4%
70-79	3916* (1059) 5.4%	159* (86) 6.8%	63* (40) 17.9%	4138* (1061) 5.5%	93943* (28855) 6.7%	43581* (23257) 9.4%	47176* (31947) 13.9%	184701* (49938) 8.4%
80	129* (143) 4.6%	139* (64) 6.4%	48* (32) 2.3%	316* (170) 4.5%	3235* (3573) 3.2%	26495* (12965) 5.0%	69650* (44586) 2.3%	99381* (48499) 2.7%
ALL	39106 (3552) 8.7%	9197 (938) 18.4%	1129 (165) 12.0%	49432 (3902) 9.7%	1166682 (102759) 10.5%	1924146 (202146) 19.5%	1129967 (149417) 9.1%	4220795 (312766) 12.6%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

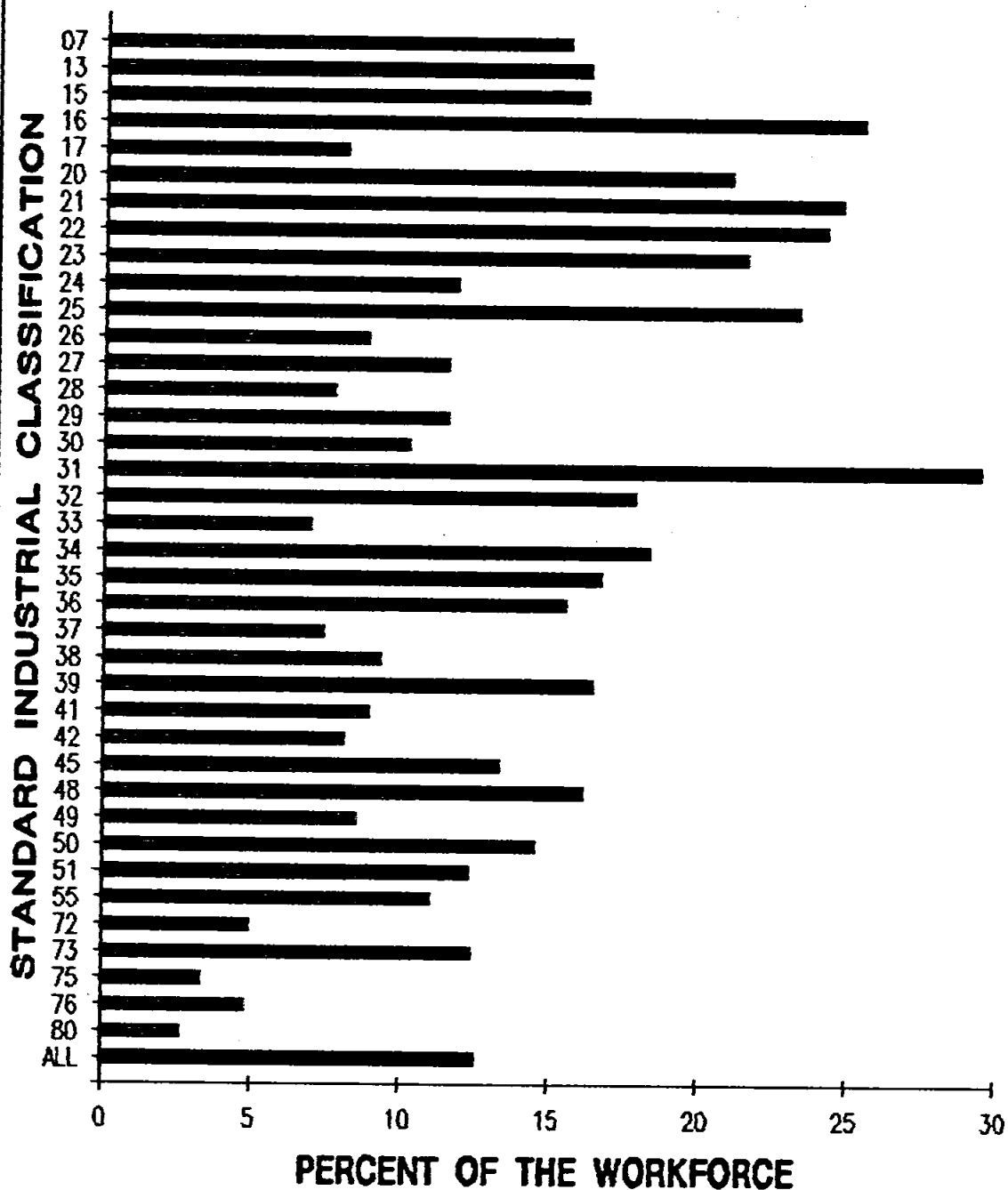
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
HAVE PART-TIME PERSONNEL FOR EMERGENCY HEALTH CARE

SIC CODE	PLANTS			TOTAL	EMPLOYEES			TOTAL
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)		SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	
07	1196* (674) 21.5%	...	...	1196* (674) 21.2%	17279* (6820) 16.7%	...	...	17279* (6820) 15.6%
13	310* (198) 3.6%	111* (63) 10.9%	46* (52) 100.0%	467* (200) 4.8%	12854* (6824) 6.2%	23186* (11620) 13.3%	31383* (35291) 100.0%	67423* (37709) 16.3%
15	2183* (918) 8.8%	436* (219) 39.4%	5* (6) 3.7%	2624* (1005) 10.0%	58107* (27612) 10.3%	70371* (39773) 35.5%	16222* (20062) 12.0%	144700* (66408) 16.2%
16	1400* (890) 12.4%	236* (152) 21.1%	49* (49) 45.9%	1685* (932) 13.5%	48404* (30821) 17.0%	63309* (39132) 30.5%	39544* (34141) 39.1%	151256* (66013) 25.5%
17	4138* (1367) 7.1%	42* (33) 2.2%	...	4180* (1373) 7.0%	124342* (43517) 9.9%	5895* (5009) 1.8%	...	130237* (45084) 8.2%
20	1446* (381) 12.7%	778* (282) 24.2%	153* (62) 27.4%	2378* (560) 15.7%	64945* (18387) 16.7%	161729* (58387) 24.0%	100582* (39250) 20.5%	327257* (78764) 21.1%
21	26* (42) 86.5%	...	26* (49) 32.9%	52* (63) 47.6%	1608* (2605) 86.2%	...	26676* (39344) 23.8%	28284* (39199) 24.8%
22	414* (170) 14.1%	385* (109) 24.2%	86* (52) 28.9%	886* (233) 18.4%	16649* (6952) 15.7%	101207* (32647) 29.2%	55647* (32881) 21.3%	173504* (53290) 24.3%
23	652* (238) 5.2%	677* (179) 21.8%	100* (62) 41.1%	1429* (299) 9.0%	33377* (11791) 7.9%	142139* (31744) 23.3%	92600* (60102) 44.4%	268116* (77381) 21.6%
24	500* (316) 4.7%	272* (170) 23.7%	...	772* (372) 6.5%	18146* (10734) 6.0%	50602* (26007) 27.6%	...	68748* (28469) 11.9%
25	264* (165) 6.3%	397* (213) 37.3%	...	660* (342) 12.4%	10756* (6753) 7.7%	110520* (63479) 43.1%	...	121276* (68821) 23.4%
26	147* (114) 3.6%	250* (114) 16.0%	...	398* (175) 6.7%	12782* (9448) 9.3%	42807* (30212) 15.2%	...	55589* (33100) 8.9%
27	1171* (397) 6.5%	390* (118) 20.8%	30* (41) 9.6%	1592* (379) 7.8%	50451* (16148) 10.6%	69175* (24090) 19.2%	17238* (22302) 5.0%	136863* (30139) 11.6%
28	1054* (286) 17.1%	68* (72) 5.8%	21* (29) 5.6%	1143* (308) 14.8%	39927* (10520) 22.1%	20446* (26547) 7.8%	11678* (15755) 2.5%	72051* (33670) 7.8%
29	...	152* (118) 51.8%	...	152* (118) 10.8%	...	25779* (14994) 40.8%	...	25779* (14994) 11.6%
30	775* (371) 11.5%	198* (94) 12.9%	22* (31) 9.9%	995* (385) 11.7%	23692* (9769) 10.5%	38307* (19879) 13.0%	15808* (22472) 6.8%	77806* (33883) 10.3%
31	...	137* (77) 24.0%	25* (24) 100.0%	162* (84) 10.8%	...	36336* (21218) 26.8%	15664* (16901) 100.0%	52000* (28918) 29.5%
32	1831* (506) 20.8%	299* (89) 29.6%	...	2130* (501) 21.3%	33704* (8405) 14.2%	69382* (23880) 33.2%	...	103086* (24690) 17.9%
33	305* (181) 7.4%	86* (77) 5.9%	40* (44) 11.8%	431* (230) 7.3%	15263* (11431) 11.0%	13507* (11939) 4.3%	46014* (42559) 7.4%	74784* (49420) 7.0%

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	1864* (559) 10.1%	715* (200) 22.9%	39* (27) 11.2%	2618 (621) 11.9%	89917 (16623) 16.2%	148605* (41034) 24.9%	38098* (29191) 10.9%	276620 (61686) 18.4%
35	2799* (881) 12.4%	793 (156) 23.3%	167* (52) 21.3%	3759* (945) 14.0%	78851 (16831) 13.0%	167314 (38788) 25.3%	153519* (48117) 13.8%	399684 (58905) 16.8%
36	564* (350) 7.9%	755 (166) 28.1%	119* (60) 15.1%	1438* (368) 13.6%	18988* (7896) 8.2%	132156* (34939) 23.9%	155160* (62243) 13.1%	306304 (71673) 15.6%
37	406* (184) 10.2%	314* (138) 26.4%	17* (6) 4.1%	737* (207) 13.2%	15835* (8076) 12.5%	68185* (32840) 28.5%	57203* (25922) 3.8%	141223* (42718) 7.5%
38	180* (163) 6.7%	46* (47) 4.8%	42* (45) 10.0%	268* (194) 6.6%	8341* (5031) 8.0%	16960* (16769) 8.7%	46253* (55829) 10.0%	71554* (63205) 9.4%
39	719* (406) 11.0%	228* (484) 28.6%	10* (10) 3.0%	957* (662) 12.4%	13165* (5986) 7.9%	53903* (122322) 36.1%	19466* (18968) 9.3%	86534* (119878) 16.5%
41	47* (58) 1.1%	92* (79) 18.0%	...	139* (89) 2.8%	2599* (3216) 2.2%	15395* (13204) 18.9%	...	17993* (12983) 9.0%
42	1974* (690) 9.9%	88* (34) 6.0%	2* (3) 3.0%	2065* (691) 9.6%	50556 (11711) 10.4%	15737* (6503) 6.1%	1430* (1510) 1.9%	67723 (12764) 8.2%
45	364* (304) 11.2%	55* (46) 9.4%	3* (4) 1.9%	422* (308) 10.6%	12335* (10746) 15.9%	8070* (6702) 7.4%	39902* (51083) 15.1%	60308* (51300) 13.4%
48	889* (570) 6.0%	303* (166) 33.6%	14* (12) 42.3%	1206* (624) 7.7%	22829* (13408) 5.4%	53148* (27879) 30.1%	33054* (28615) 47.2%	109031* (44364) 16.2%
49	927* (512) 11.3%	125* (86) 6.7%	...	1052* (511) 10.3%	37913* (19106) 14.1%	34693* (22632) 8.2%	...	72606* (32050) 8.6%
50	2727* (831) 9.0%	295* (186) 16.4%	...	3022* (844) 9.4%	64424* (21282) 10.2%	69192* (48098) 24.4%	...	133616* (52139) 14.6%
51	914* (470) 10.0%	...	...	914* (470) 9.8%	26259* (13502) 14.2%	...	...	26259* (13502) 12.4%
55	2871* (1111) 15.2%	...	...	2871* (1111) 14.7%	45208* (18435) 14.6%	...	...	45208* (18435) 11.1%
72	1384* (728) 6.7%	11* (11) 1.6%	...	1395* (728) 6.5%	19727* (10244) 5.2%	3746* (3746) 4.6%	...	23473* (10693) 5.0%
73	1088* (544) 6.6%	148* (88) 9.9%	63* (40) 18.6%	1300* (563) 7.1%	49983* (27169) 11.9%	39835* (24039) 11.4%	47176* (31947) 14.3%	136995* (54423) 12.5%
75	1027* (531) 3.9%	...	...	1027* (531) 3.9%	14318* (7581) 3.5%	...	...	14318* (7581) 3.4%
76	416* (442) 4.3%	...	...	416* (442) 4.2%	9915* (9272) 5.6%	...	...	9915* (9272) 4.9%
80	129* (143) 4.6%	139* (64) 6.4%	48* (32) 2.3%	316* (170) 4.5%	3235* (3573) 3.2%	26495* (12965) 5.0%	69650* (44586) 2.3%	99381* (48499) 2.7%
All	39106 (4345) 8.8%	9021 (835) 18.2%	1129 (161) 12.0%	49256 (4602) 9.7%	1166682 (134442) 10.6%	1898133 (185959) 19.4%	1129967 (143265) 9.1%	4194782 (334504) 12.6%

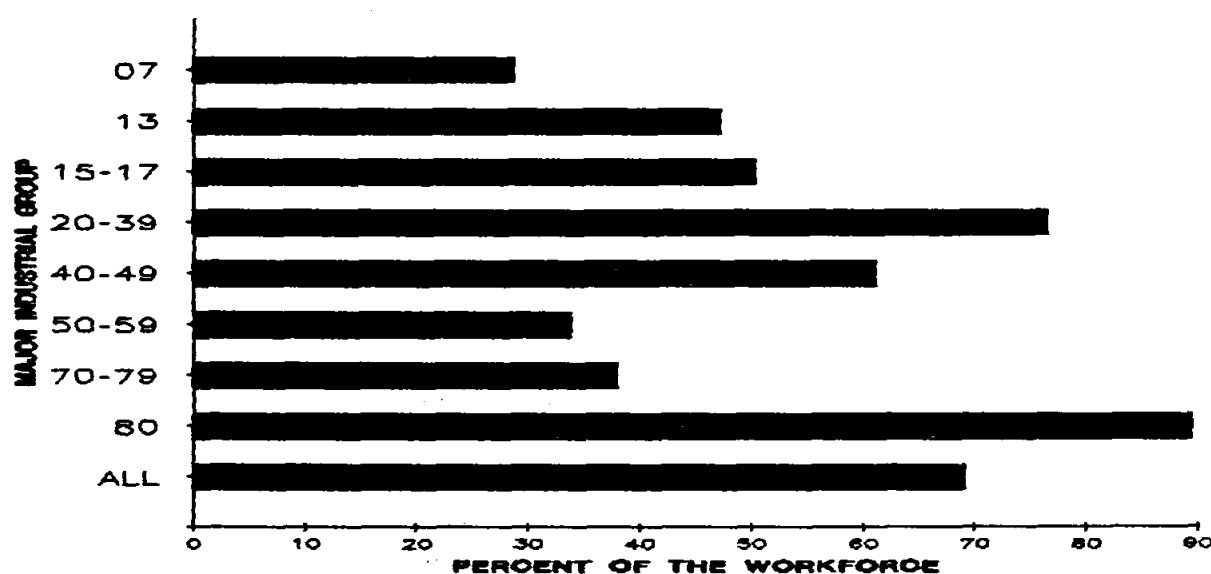
\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE III - 11**  
**PART-TIME EMERGENCY HEALTH CARE PERSONNEL ON-SITE**  
**(NOES 1981-1983)**





**FIGURE III - 12**  
**EMERGENCY HEALTH CARE PERSONNEL ON-SITE**  
(NOSES 1981-1983)



NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-11

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 HAVE DESIGNATED PERSONNEL FOR EMERGENCY HEALTH CARE

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	2253* (1028) 40.5%	...	...	2253* (1028) 40.0%	32041* (12878) 30.9%	...	...	32041* (12878) 28.9%
13	2991* (992) 34.8%	501* (202) 49.1%	46* (52) 100.0%	3538* (1069) 36.6%	58732 (11587) 28.1%	106244* (43807) 61.1%	31383* (35291) 100.0%	196359* (62727) 47.4%
15-17	36370 (2929) 38.6%	2260 (449) 54.5%	219* (135) 90.3%	38849 (2975) 39.4%	900188 (76384) 42.9%	431796 (89478) 58.6%	220877* (100132) 93.6%	1552861 (138149) 50.5%
20-39	57802 (3823) 37.7%	24617 (1573) 77.5%	5815 (234) 92.7%	88234 (4511) 46.1%	2113417 (111372) 45.8%	5152359 (314371) 80.7%	7532483 (289948) 91.1%	14798260 (463498) 76.8%
40-49	18249 (1666) 34.3%	4108 (820) 70.3%	341* (95) 72.9%	22698 (2078) 38.2%	583273 (69794) 40.7%	855100 (199937) 74.1%	498506 (98417) 86.9%	1936879 (259355) 61.3%
50-59	16105 (2034) 27.6%	986* (320) 37.1%	...	17091 (2061) 28.0%	345357 (45532) 30.7%	176200* (62612) 43.1%	...	521556 (77639) 34.0%
70-79	13224 (2066) 18.1%	1106 (217) 47.1%	295* (143) 83.4%	14625 (2103) 19.3%	324668 (51581) 23.3%	242802 (41952) 52.3%	272936* (123744) 80.4%	840407 (140663) 38.2%
80	2592* (802) 91.3%	1641 (213) 75.8%	1787 (232) 86.7%	6021 (864) 85.2%	84039* (22952) 82.7%	449526 (67795) 84.1%	2750191 (313138) 91.0%	3283756 (317234) 89.7%
ALL	149586 (6087) 33.3%	35219 (1893) 70.4%	8503 (398) 90.1%	193308 (6718) 38.0%	4441715 (169322) 40.1%	7414028 (398755) 75.2%	11306376 (467328) 90.7%	23162119 (657064) 69.3%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
HAVE DESIGNATED PERSONNEL FOR EMERGENCY HEALTH CARE

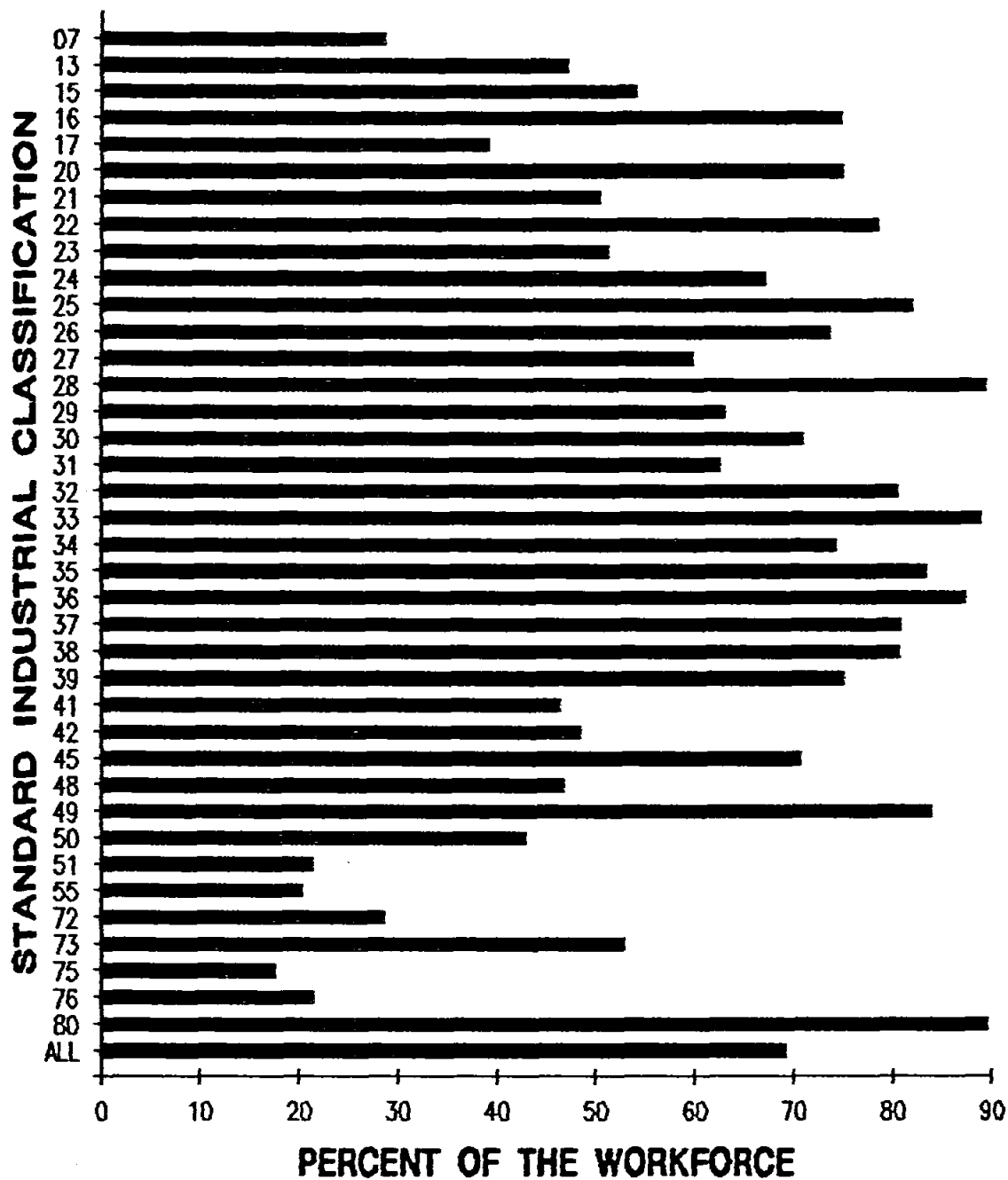
SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	2253* (1028) 40.5%	...	...	2253* (1028) 40.0%	32041* (12878) 30.9%	...	...	32041* (12878) 28.9%
13	2991* (992) 34.8%	501* (202) 49.1%	46* (52) 100.0%	3538* (1069) 36.6%	58732 (11587) 28.1%	106244* (43807) 61.1%	31383* (35291) 100.0%	196359* (62727) 47.4%
15	11147 (1615) 44.7%	706* (189) 63.8%	111* (100) 82.5%	11965 (1627) 45.7%	249104 (36472) 44.3%	116631* (35695) 58.8%	119619* (71433) 88.7%	485354 (90429) 54.2%
16	6538 (1045) 57.9%	797* (211) 71.3%	107* (67) 100.0%	7443 (1098) 59.5%	181615 (34492) 63.9%	161500* (47065) 77.7%	101258* (53561) 100.0%	444373 (84688) 74.9%
17	18684 (1798) 32.1%	757* (358) 39.4%	...	19441 (1837) 32.4%	469469 (46525) 37.5%	153665* (73720) 46.4%	...	623135 (82997) 39.4%
20	4077 (547) 35.7%	2481 (445) 77.1%	542 (119) 97.0%	7100 (705) 46.7%	163448 (22084) 42.1%	546031 (99701) 81.0%	457481 (99796) 93.0%	1166960 (109761) 75.1%
21	30* (43) 100.0%	...	36* (60) 45.1%	66* (72) 60.5%	1866* (2685) 100.0%	...	55808* (50579) 49.8%	57674* (50014) 50.6%
22	1003* (299) 34.2%	1073 (114) 67.6%	287 (71) 96.0%	2363 (299) 49.0%	55074 (11195) 51.9%	252292 (30819) 72.7%	255272* (89684) 97.8%	562637 (88906) 78.8%
23	3103* (1218) 24.8%	1680 (216) 54.2%	200* (86) 82.6%	4983 (1211) 31.4%	97894* (26176) 23.1%	358585 (48548) 58.8%	181984* (75036) 87.3%	638463 (85782) 51.4%
24	3518 (459) 32.8%	908 (150) 79.1%	104* (74) 100.0%	4530 (484) 37.9%	141536 (21262) 46.6%	156186 (24353) 85.1%	92355* (52501) 100.0%	390076 (61510) 67.3%
25	1815* (454) 43.6%	949 (151) 89.3%	119* (75) 99.6%	2882 (492) 53.9%	66385* (17555) 47.7%	236312 (37914) 92.2%	122998* (62394) 100.0%	425694 (75735) 82.1%
26	1678* (509) 40.8%	1070 (261) 68.2%	180* (85) 84.2%	2928 (592) 49.7%	77893 (15637) 56.6%	199433 (47753) 70.9%	184857* (74073) 89.4%	462184 (103524) 73.8%
27	4105 (786) 22.7%	1124 (189) 60.0%	289* (106) 91.5%	5518 (881) 27.2%	158783 (23402) 33.2%	234202 (48352) 64.9%	317770 (76759) 91.9%	710755 (101926) 60.0%
28	3254 (444) 52.7%	969 (107) 83.5%	380 (63) 100.0%	4603 (437) 59.7%	111656 (8194) 61.8%	234655 (31088) 90.0%	476341 (101388) 100.0%	822652 (104956) 89.6%
29	73* (87) 7.2%	213* (125) 72.7%	94* (40) 93.4%	381* (185) 27.1%	6668* (7929) 16.3%	41598* (19518) 65.8%	92134* (54777) 78.4%	140401* (60859) 63.3%
30	3190* (878) 47.5%	1031* (263) 67.0%	180* (67) 80.3%	4400 (986) 51.9%	120723 (24350) 53.7%	206395 (50069) 70.1%	208455* (70884) 89.2%	535574 (85179) 71.1%
31	88* (61) 9.5%	366* (138) 64.2%	25* (24) 100.0%	479* (162) 31.4%	5104* (3905) 20.5%	89605* (35191) 66.1%	15664* (16901) 100.0%	110374* (39868) 62.7%
32	5300 (801) 60.2%	878 (153) 86.7%	184* (71) 99.9%	6361 (813) 63.8%	146273 (17228) 61.7%	188907 (33075) 90.4%	128993* (49687) 100.0%	464173 (43852) 80.7%
33	1514 (348) 36.6%	1426 (136) 97.2%	314 (68) 93.3%	3254 (404) 54.8%	60478 (13920) 43.7%	300120 (31156) 96.5%	593065 (95838) 95.4%	953663 (101789) 89.0%

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	8294 (1059) 44.8%	2707 (164) 86.7%	318* (84) 91.9%	11319 (1050) 51.5%	300455 (27184) 54.1%	529577 (30343) 88.8%	287700* (93825) 82.0%	1117732 (106637) 74.4%
35	8949 (1158) 39.5%	2991 (199) 87.8%	784 (79) 100.0%	12723 (1219) 47.4%	287906 (30884) 47.4%	590518 (20453) 89.3%	1112933 (147534) 100.0%	1991357 (153948) 83.6%
36	2129 (504) 30.0%	2435 (100) 90.7%	729 (164) 92.6%	5293 (512) 50.0%	98593 (14515) 42.8%	521659 (12364) 94.4%	1098416 (169554) 92.9%	1718668 (172620) 87.4%
37	2271 (452) 57.2%	1057 (127) 88.8%	351 (74) 84.4%	3679 (452) 65.9%	89708 (18947) 70.6%	219363 (30229) 91.7%	1212320 (204659) 80.1%	1521391 (197490) 80.9%
38	1027* (270) 38.2%	738 (148) 77.1%	361* (126) 86.7%	2126 (350) 52.3%	52501* (13708) 50.2%	132179 (31251) 68.0%	428568* (127647) 93.1%	613248 (129498) 80.8%
39	2385 (581) 36.4%	522* (941) 65.4%	338* (216) 100.0%	3245* (1093) 42.2%	70474 (12163) 42.5%	114740* (211812) 76.8%	209369* (120490) 100.0%	394583* (193374) 75.2%
41	2287* (783) 51.7%	188* (109) 36.9%	...	2476* (825) 50.2%	65604* (22160) 55.8%	26913* (15818) 33.0%	...	92517* (31426) 46.5%
42	5092 (1176) 25.4%	1025* (274) 69.1%	82* (54) 99.5%	6198 (1210) 28.7%	140050 (22109) 28.7%	184678* (52321) 71.4%	74830* (49333) 100.0%	399557 (74061) 48.6%
45	1149* (589) 35.5%	173* (137) 29.4%	106* (45) 72.1%	1429* (614) 35.9%	30460* (15458) 39.3%	55575* (49616) 50.8%	233459* (75972) 88.3%	319495* (94998) 70.8%
48	3292* (1083) 22.4%	700 (166) 77.7%	34* (21) 99.0%	4026* (1091) 25.7%	120896* (62232) 28.4%	124462* (32619) 70.6%	70083* (43687) 100.0%	315442* (80882) 46.9%
49	5054 (1106) 61.5%	1703* (556) 91.5%	120* (90) 69.2%	6877 (1369) 67.1%	181580 (45261) 67.4%	405744* (151157) 95.4%	120133* (61318) 82.0%	707457 (176293) 84.1%
50	9073 (1457) 29.9%	986* (320) 54.7%	...	10059 (1563) 31.3%	216167 (38105) 34.3%	176200* (62612) 62.2%	...	392367 (80948) 43.0%
51	2154* (624) 23.6%	...	...	2154* (624) 23.0%	45827* (16472) 24.8%	...	...	45827* (16472) 21.6%
55	4878* (1557) 25.8%	...	...	4878* (1557) 25.0%	83362* (27483) 27.0%	...	...	83362* (27483) 20.5%
72	3717 (871) 18.0%	185* (104) 27.5%	13* (19) 100.0%	3915 (844) 18.4%	96171* (25819) 25.3%	30038* (16607) 36.5%	10670* (15114) 100.0%	136879 (32824) 28.9%
73	4066 (921) 24.5%	825 (181) 55.4%	282* (135) 82.7%	5173 (984) 28.1%	130529 (31151) 31.0%	191854 (39037) 54.9%	262266* (117848) 79.7%	584649 (130774) 53.1%
75	4459* (1627) 17.0%	59* (60) 99.7%	...	4517* (1628) 17.2%	66608* (24825) 16.1%	8238* (8380) 100.0%	...	74846* (26232) 17.8%
76	983* (612) 10.1%	36* (45) 29.4%	...	1019* (618) 10.3%	31360* (17964) 17.6%	12672* (15755) 52.1%	...	44032* (24244) 21.7%
80	2592* (802) 91.3%	1641 (213) 75.8%	1787 (232) 86.7%	6021 (864) 85.2%	84039* (22952) 82.7%	449526 (67795) 84.1%	2750191 (313138) 91.0%	3283756 (317234) 89.7%
All	148211 (6106) 33.2%	34902 (1027) 70.4%	8503 (325) 90.2%	191616 (6184) 37.9%	4397032 (167142) 39.9%	7356300 (187213) 75.3%	11306376 (439309) 90.7%	23059708 (495556) 69.3%

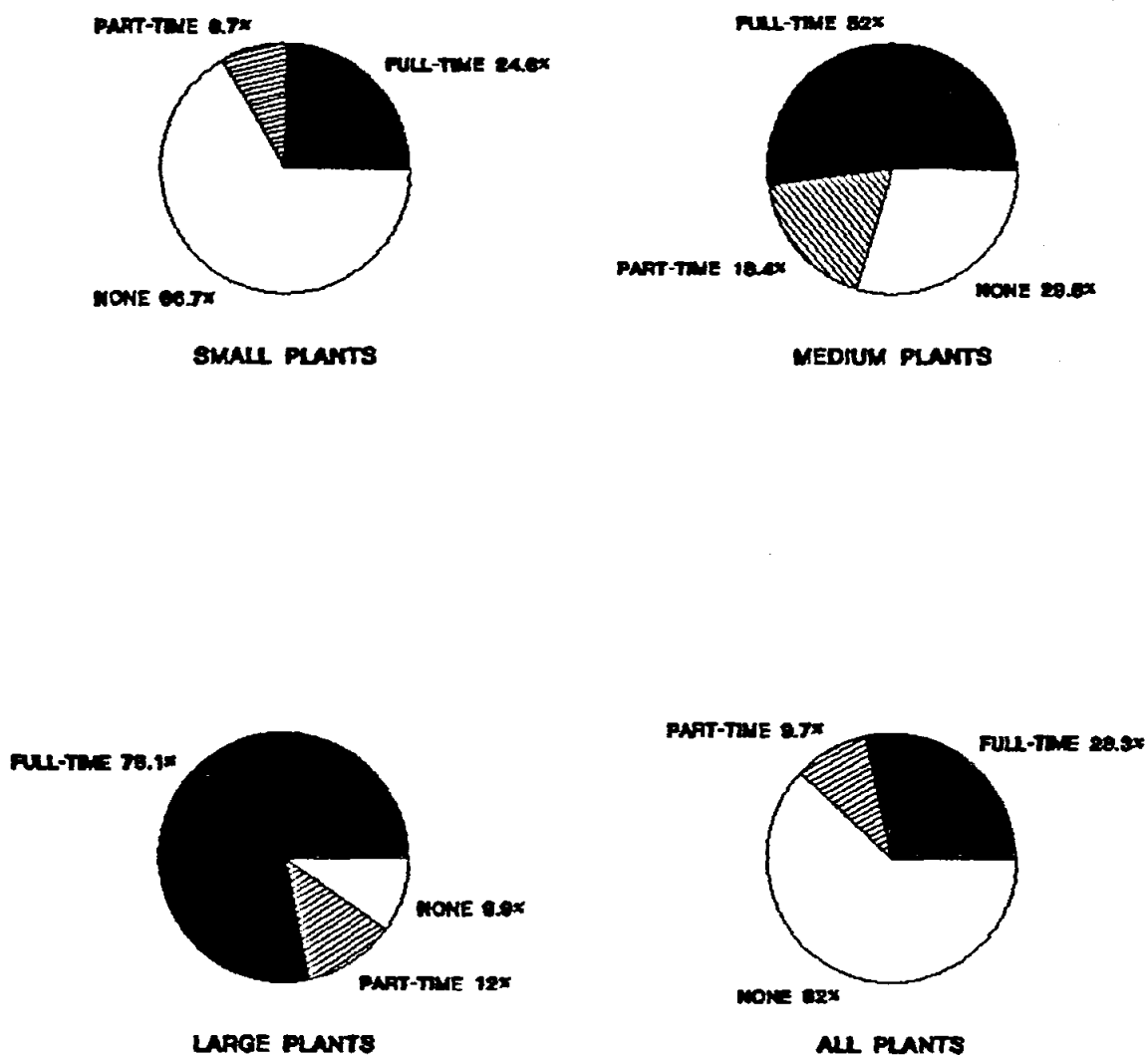
\*Standard error &gt;25% of the estimate. The estimate may be unreliable.

...No facilities observed.

**FIGURE III - 13**  
**EMERGENCY HEALTH CARE PERSONNEL ON-SITE**  
 (NOES 1981-1983)



**FIGURE III - 14**  
**EMERGENCY HEALTH CARE PROVIDED ON-SITE**  
**(NOES 1981-1983)**



**NOES QUESTIONNAIRE ITEM NO. 16**  
**Employment of Physicians to Provide Health Care**

**Intent**

The intent of this question was to determine if an industrial facility employed physicians, either full or part-time, specifically to provide health care to the employees of the facility.

This item was displayed on the questionnaire as:

16. Do you have on your payroll one or more on-site physicians to give your employees medical care?
- 1 Yes, full-time
  - 2 Yes, part-time
  - 3 No

**Notes**

Physicians not engaged in the direct provision of health care to employees of the facility, such as those employed primarily for purposes of research, were excluded from consideration here. Physicians provided by a third-party contractor were considered in question 17.

Full or part-time physicians were defined on the bases of presence during 1 hours of facility operation (full-time) or less (part-time).

**Analysis**

Three analyses of the responses to question 16 are presented.

- (1) Response 16.1 - Presence of an employed physician to provide health care to employees during all hours of facility operation

The estimates of the plants which have full-time employed physicians, and workers in those plants (by number and proportion of the totals) are displayed in Figures III-15 and III-16, and Tables III-13 and III-14.

Figure III-15	Employed physician on-site full-time (by major industrial group)
Figure III-16	Employed physician on-site full-time (by 2-digit SIC)
Table III-13	Number and percent of plants and employees in plants which have an employed physician on-site full-time (by major industrial group)
Table III-14	Number and percent of plants and employees in plants which have an employed physician on-site full-time (by 2-digit SIC)

- (2) Response 16.2 - Presence of an employed physician to provide health care to employees during at least some of the hours of facility operation

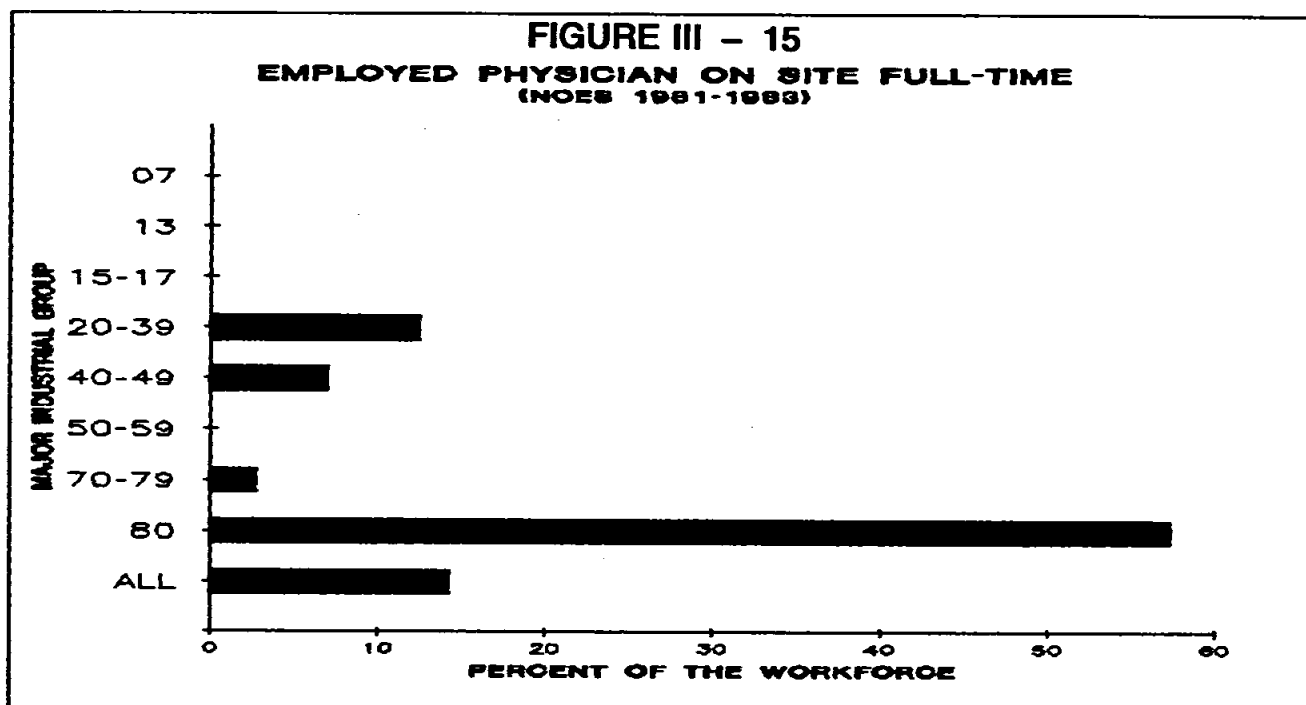
The estimates of the plants which have part-time employed physicians, and workers in those plants (by number and proportion of the totals) are displayed in Figures III-17 and III-18, and Tables III-15 and III-16.

Figure III-17	Employed physician on-site part-time (by major industrial group)
Figure III-18	Employed physician on-site part-time (by 2-digit SIC)
Table III-15	Number and percent of plants and employees in plants which have an employed physician on-site part-time (by major industrial group)
Table III-16	Number and percent of plants and employees in plants which have an employed physician on-site part-time (by 2-digit SIC)

- (3) Response 16.1 or 16.2 - Presence of an employed physician to provide health care to employees, either full or part-time

The estimates of the plants which have either part or full-time employed physicians, and workers in those plants (by number and proportion of the totals) are displayed in Figures III-19 and III-20, and III-21, and Tables III-17 and III-18.

Figure III-19	Employed physician on-site part or full-time (by major industrial group)
Figure III-20	Employed physician on-site part or full-time (by 2-digit SIC)
Figure III-21	Plants with an employed physician on-site
Table III-17	Number and percent of plants and employees in plants which have an employed physician on-site part or full-time (by major industrial group)
Table III-18	Number and percent of plants and employees in plants which have an employed physician on-site part or full-time (by 2-digit SIC)



NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-13

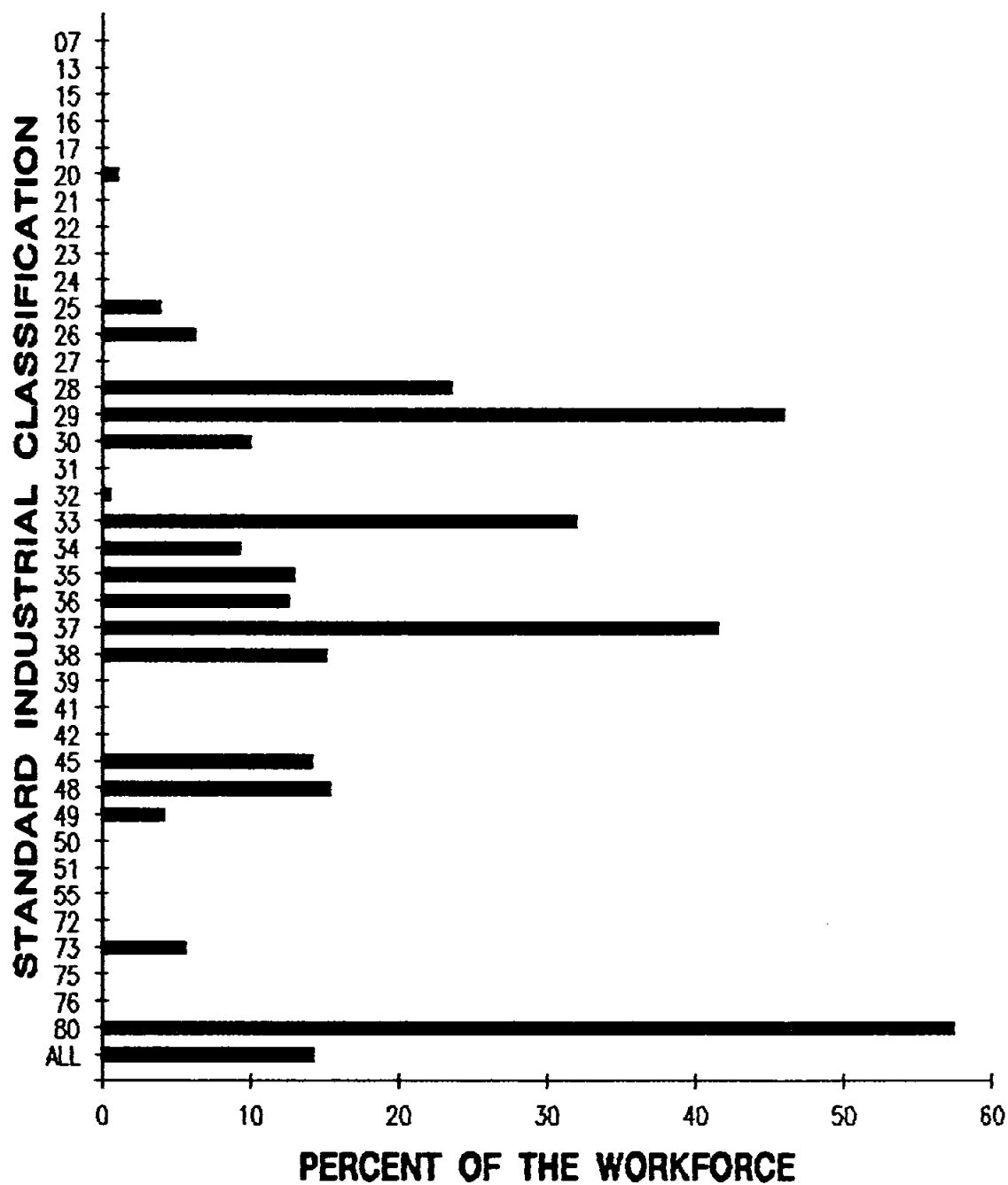
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
HAVE AN EMPLOYED PHYSICIAN ON SITE FULL-TIME

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...
15-17	...	...	...	...	...	...	...	...
20-39	253* (125) .2%	2* (2) .0%	793 (136) 12.7%	1049 (180) .5%	13190* (5762) .3%	306* (309) .0%	2410732 (325581) 29.2%	2424228 (326026) 12.6%
40-49	939* (654) 1.8%	52* (54) .9%	57* (29) 12.1%	1047* (666) 1.8%	70251* (47586) 4.9%	18178* (18788) 1.6%	134706* (57446) 23.5%	223135* (70445) 7.1%
50-59	...	...	...	...	...	...	...	...
70-79	...	...	34* (28) 9.5%	34* (28) .0%	...	...	63615* (41134) 18.7%	63615* (41134) 2.9%
80	182* (160) 6.4%	944 (212) 43.6%	1177 (219) 57.1%	2302 (354) 32.6%	5990* (5288) 5.9%	271395 (62238) 50.8%	1826307 (309433) 60.4%	2103692 (310686) 57.5%
ALL	1373* (685) .3%	998 (219) 2.0%	2061 (260) 21.8%	4432 (776) .9%	89431* (48224) .8%	289879 (65012) 2.9%	4435360 (454691) 35.6%	4814670 (457682) 14.4%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
...No facilities observed.



**FIGURE III - 16**  
**EMPLOYED PHYSICIAN ON SITE FULL-TIME**  
**(NOES 1981-1983)**

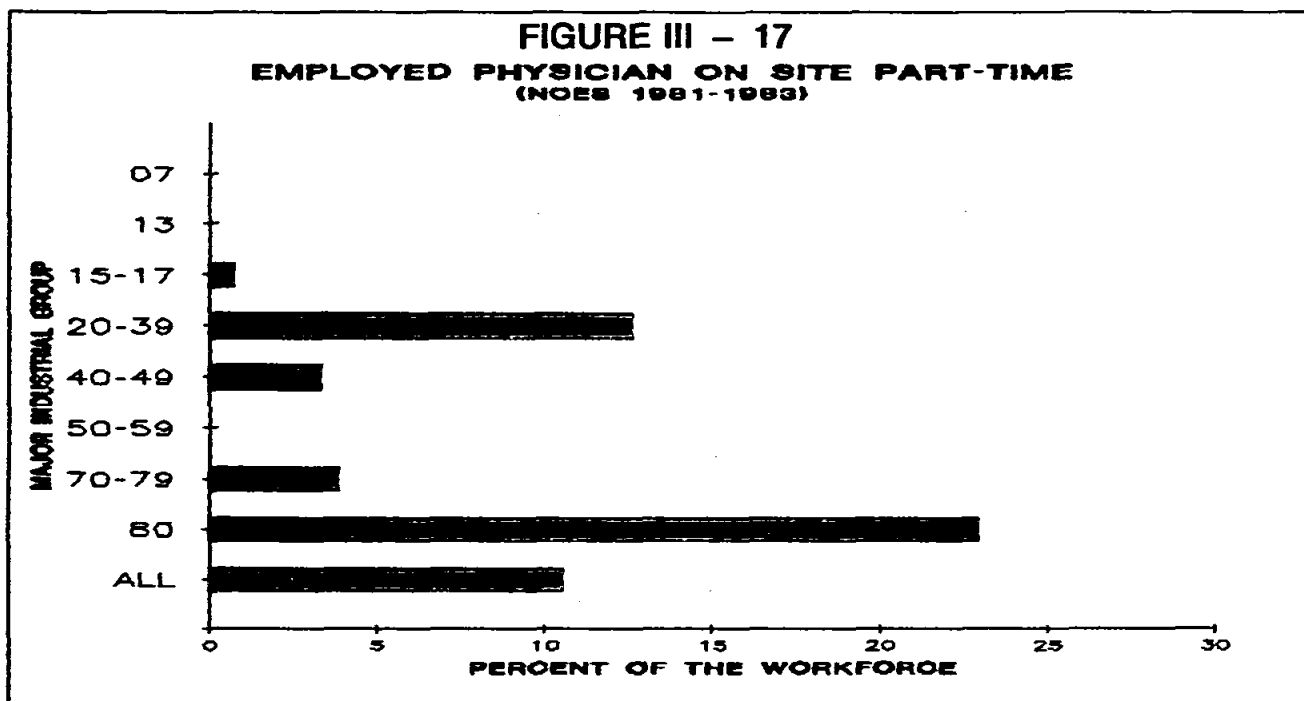


NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
HAVE AN EMPLOYED PHYSICIAN ON SITE FULL-TIME

SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...
20	...	...	27* (21) 4.8%	27* (21) .2%	...	...	19102* (13481) 3.9%	19102* (13481) 1.2%
21	...	...	...	...	...	...	...	...
22	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...
25	...	...	3* (4) 2.7%	3* (4) .1%	...	...	20917* (22806) 17.0%	20917* (22806) 4.0%
26	...	...	11* (12) 5.3%	11* (12) .2%	...	...	40240* (42386) 19.5%	40240* (42386) 6.4%
27	...	...	...	...	...	...	...	...
28	39* (39) .6%	...	107* (68) 28.1%	146* (81) 1.9%	1885* (1867) 1.0%	...	216042* (85216) 45.4%	217927* (85422) 23.7%
29	...	...	80* (38) 79.1%	80* (38) 5.7%	...	...	102156* (69145) 86.9%	102156* (69145) 46.1%
30	...	...	64* (61) 28.7%	64* (61) .8%	...	...	76222* (64639) 32.6%	76222* (64639) 10.1%
31	...	...	...	...	...	...	...	...
32	115* (116) 1.3%	...	...	115* (116) 1.2%	3452* (3468) 1.5%	...	...	3452* (3468) .6%
33	...	2* (2) .2%	90* (35) 26.7%	92* (35) 1.6%	...	306* (309) .1%	343919 (56912) 55.3%	344225 (57147) 32.1%

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	56* (52) .3%	...	74* (58) 21.4%	130* (75) .6%	4051* (3728) .7%	...	136526* (78495) 38.9%	140577* (78401) 9.4%
35	42* (45) .2%	...	69 (15) 8.8%	111* (47) .4%	3801* (4010) .6%	...	308140 (71321) 27.7%	311941 (71320) 13.1%
36	...	...	42* (18) 5.3%	42* (18) .4%	...	...	250108* (103799) 21.2%	250108* (103799) 12.7%
37	...	...	145* (47) 34.9%	145* (47) 2.6%	...	...	781727* (269243) 51.6%	781727* (269243) 41.6%
38	...	...	80* (80) 19.3%	80* (80) 2.0%	...	...	115634* (115634) 25.1%	115634* (115634) 15.2%
39	...	...	...	...	...	...	...	...
41	...	...	...	...	...	...	...	...
42	...	...	...	...	...	...	...	...
45	...	...	23* (15) 15.6%	23* (15) .6%	...	...	64623* (67658) 24.5%	64623* (67658) 14.3%
48	486* (606) 3.3%	...	34* (21) 99.0%	519* (607) 3.3%	33989* (42440) 8.0%	...	70083* (43687) 100.0%	104072* (61528) 15.5%
49	453* (396) 5.5%	...	...	453* (396) 4.4%	36262* (31700) 13.5%	...	...	36262* (31700) 4.3%
50	...	...	...	...	...	...	...	...
51	...	...	...	...	...	...	...	...
55	...	...	...	...	...	...	...	...
72	...	...	...	...	...	...	...	...
73	...	...	34* (28) 9.8%	34* (28) .2%	...	...	63615* (41134) 19.3%	63615* (41134) 5.8%
75	...	...	...	...	...	...	...	...
76	...	...	...	...	...	...	...	...
80	182* (160) 6.4%	944 (212) 43.6%	1177 (219) 57.1%	2302 (354) 32.6%	5990* (5288) 5.9%	271395 (62238) 50.8%	1826307 (309433) 60.4%	2103692 (310686) 57.5%
All	1373* (694) .3%	972 (210) 2.0%	2061 (267) 21.9%	4406 (799) .9%	89431* (48338) .8%	280791 (61177) 2.9%	4435360 (494858) 35.6%	4805581 (504370) 14.4%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.



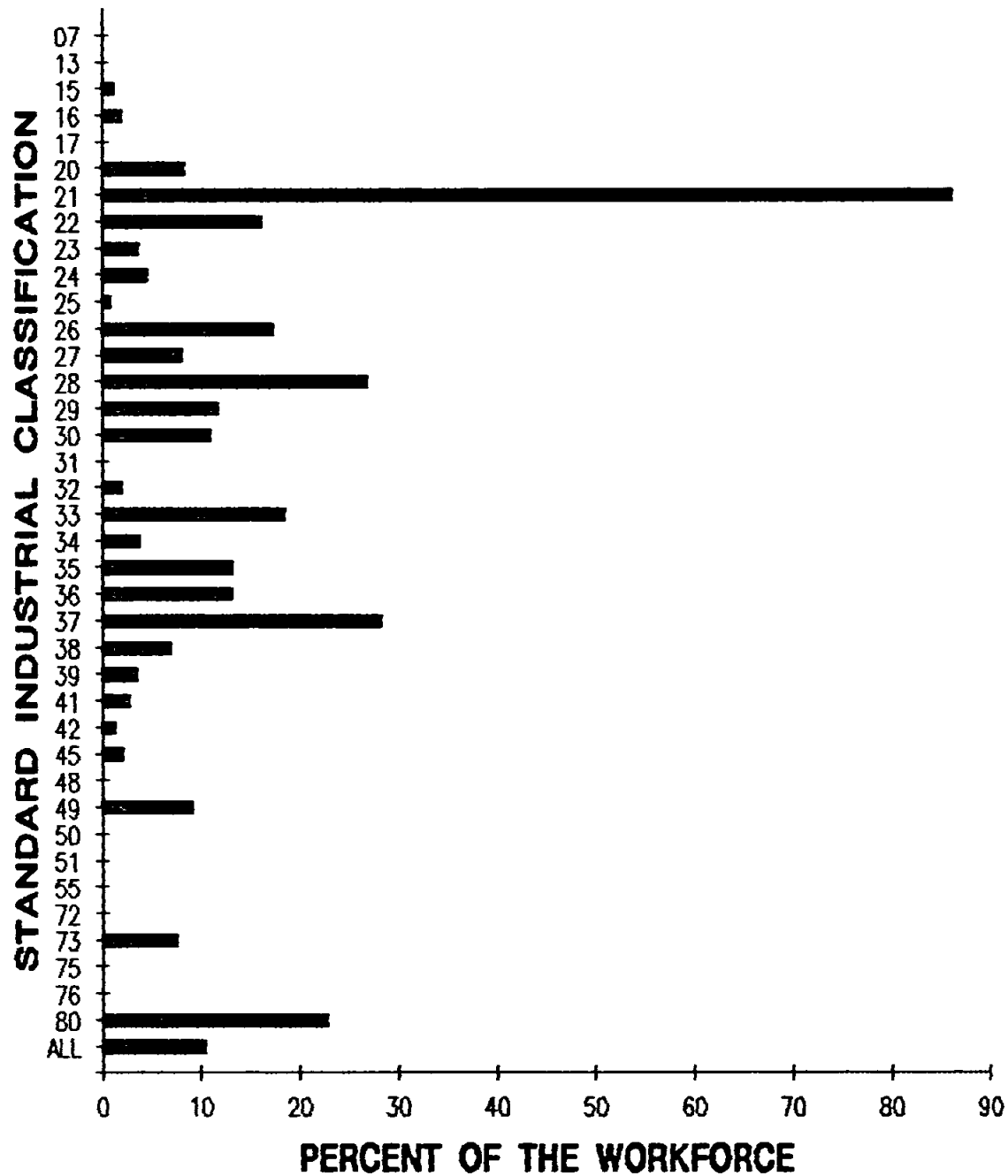
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-15

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
HAVE AN EMPLOYED PHYSICIAN ON SITE PART-TIME

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...
15-17	...	...	8* (5) 3.5%	8* (5) .0%	...	...	25350* (14094) 10.7%	25350* (14094) .8%
20-39	180* (108) .1%	905 (182) 2.9%	1306 (203) 20.8%	2392 (314) 1.3%	15789* (9576) .3%	279806 (57982) 4.4%	2154844 (186526) 26.1%	2450439 (211200) 12.7%
40-49	422* (400) .8%	131* (96) 2.2%	28* (24) 6.0%	581* (392) 1.0%	14868* (15303) 1.0%	44077* (31925) 3.8%	47945* (38866) 8.4%	106890* (55782) 3.4%
50-59	...	...	...	...	...	...	...	...
70-79	...	15* (13) .6%	100* (105) 28.3%	115* (106) .2%	...	7143* (6524) 1.5%	78102* (75565) 23.0%	85245* (75955) 3.9%
80	184* (207) 6.5%	55* (39) 2.6%	602* (160) 29.2%	841* (257) 11.9%	5898* (6718) 5.8%	15715* (12146) 2.9%	821502 (203565) 27.2%	843115 (202337) 23.0%
ALL	786* (463) .2%	1107 (210) 2.2%	2045 (281) 21.7%	3937 (575) .8%	36556* (19261) .3%	346741 (67611) 3.5%	3127741 (289223) 25.1%	3511038 (307612) 10.5%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
...No facilities observed.

**FIGURE III - 18**  
**EMPLOYED PHYSICIAN ON SITE PART-TIME**  
**(NOES 1981-1983)**



NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
HAVE AN EMPLOYED PHYSICIAN ON SITE PART-TIME

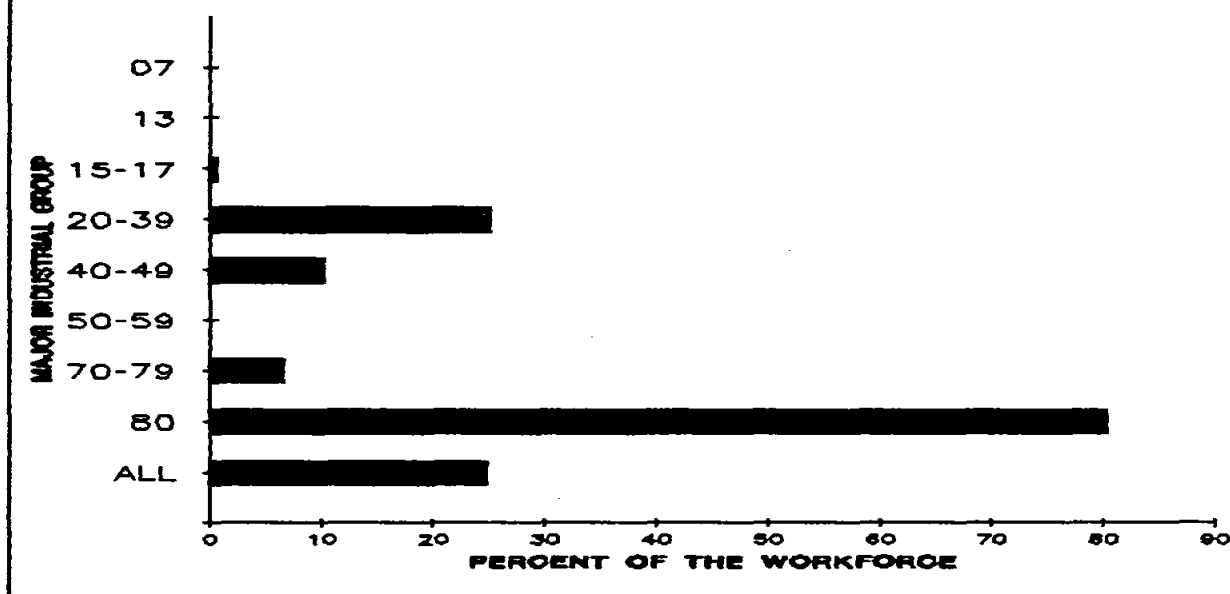
SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...
15	...	...	3* (3) 2.5%	3* (3) .0%	...	...	12768* (11270) 9.5%	12768* (11270) 1.4%
16	...	...	5* (4) 4.7%	5* (4) .0%	...	...	12582* (11004) 12.4%	12582* (11004) 2.1%
17	...	...	...	...	...	...	...	...
20	...	17* (31) .5%	121* (56) 21.6%	137* (57) .9%	...	8023* (14699) 1.2%	124244* (50960) 25.3%	132267* (47717) 8.5%
21	4* (6) 14.6%	...	54* (34) 68.0%	58* (33) 53.3%	258* (345) 13.8%	...	98088* (66468) 87.5%	98346* (66339) 86.3%
22	...	49* (39) 3.1%	79* (57) 26.3%	128* (91) 2.7%	...	19487* (15373) 5.6%	97056* (63995) 37.2%	116543* (70762) 16.3%
23	...	...	47* (41) 19.4%	47* (41) .3%	...	...	47062* (40984) 22.6%	47062* (40984) 3.8%
24	...	...	12* (10) 11.5%	12* (10) .1%	...	...	27621* (22969) 29.9%	27621* (22969) 4.8%
25	...	15* (29) 1.4%	...	15* (29) .3%	...	4952* (9618) 1.9%	...	4952* (9618) 1.0%
26	60* (74) 1.5%	71* (62) 4.5%	82* (54) 38.4%	213* (121) 3.6%	4856* (6014) 3.5%	35265* (30477) 12.5%	69378* (50120) 33.5%	109499* (61649) 17.5%
27	...	...	61* (27) 19.3%	61* (27) .3%	...	...	98185* (30004) 28.4%	98185* (30004) 8.3%
28	72* (72) 1.2%	300* (111) 25.9%	115* (57) 30.2%	487* (142) 6.3%	7059* (7059) 3.9%	87333* (25020) 33.5%	153277* (80409) 32.2%	247669* (88728) 27.0%
29	...	35* (27) 11.8%	21* (20) 21.0%	56* (31) 4.0%	...	11069* (8773) 17.5%	15389* (14466) 13.1%	26459* (15486) 11.9%
30	...	6* (18) .4%	43* (22) 19.1%	49* (24) .6%	...	1241* (3423) .4%	82612* (40971) 35.4%	83853* (40311) 11.1%
31	...	...	...	...	...	...	...	...
32	...	18* (20) 1.7%	3* (11) 1.9%	21* (23) .2%	...	8209* (9255) 3.9%	3607* (11505) 2.8%	11817* (14829) 2.1%
33	...	156* (98) 10.6%	120* (50) 35.5%	276* (106) 4.6%	...	39304* (23841) 12.6%	161453* (65190) 26.0%	200757* (66561) 18.7%

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	...	106* (59) 3.4%	30* (22) 8.7%	136* (64) .6%	...	26385* (16654) 4.4%	33622* (35307) 9.6%	60007* (39606) 4.0%
35	...	58* (40) 1.7%	232 (54) 29.5%	290 (66) 1.1%	...	18869* (12658) 2.9%	297500 (62725) 26.7%	316369 (61847) 13.3%
36	44* (55) .6%	38* (35) 1.4%	131* (61) 16.6%	212* (110) 2.0%	3616* (4555) 1.6%	13038* (13189) 2.4%	243962 (60389) 20.6%	260617 (64675) 13.3%
37	...	26* (24) 2.2%	116* (35) 27.8%	142* (37) 2.5%	...	5290* (4892) 2.2%	529636 (82988) 35.0%	534926 (80127) 28.5%
38	...	11* (13) 1.1%	31* (26) 7.4%	41* (26) 1.0%	...	1338* (1609) .7%	52687* (48692) 11.4%	54025* (48558) 7.1%
39	...	...	10* (10) 3.0%	10* (10) .1%	...	...	19466* (18968) 9.3%	19466* (18968) 3.7%
41	202* (210) 4.6%	...	...	202* (210) 4.1%	5865* (6101) 5.0%	...	...	5865* (6101) 2.9%
42	...	...	7* (17) 8.4%	7* (17) .0%	...	...	12595* (30665) 16.8%	12595* (30665) 1.5%
45	...	...	3* (4) 2.3%	3* (4) .1%	...	...	10314* (10989) 3.9%	10314* (10989) 2.3%
48	...	...	...	...	...	...	...	...
49	220* (349) 2.7%	131* (96) 7.1%	18* (22) 10.3%	369* (350) 3.6%	9003* (14291) 3.3%	44077* (31925) 10.4%	25035* (31261) 17.1%	78115* (56150) 9.3%
50	...	...	...	...	...	...	...	...
51	...	...	...	...	...	...	...	...
55	...	...	...	...	...	...	...	...
72	...	...	...	...	...	...	...	...
73	...	15* (13) 1.0%	100* (105) 29.4%	115* (106) .6%	...	7143* (6524) 2.0%	78102* (75565) 23.7%	85245* (75955) 7.7%
75	...	...	...	...	...	...	...	...
76	...	...	...	...	...	...	...	...
80	184* (207) 6.5%	55* (39) 2.6%	602* (160) 29.2%	841* (257) 11.9%	5898* (6718) 5.8%	15715* (12146) 2.9%	821502 (203565) 27.2%	843115 (202337) 23.0%
A11	786* (431) .2%	1107 (225) 2.2%	2045 (293) 21.7%	3937 (559) .8%	36556* (17979) .3%	346741 (69031) 3.5%	3127741 (297001) 25.1%	3511038 (308951) 10.6%

\*Standard error &gt;25% of the estimate. The estimate may be unreliable.

...No facilities observed.

**FIGURE III - 19**  
**EMPLOYED PHYSICIAN ON SITE PART- OR FULL-TIME**  
**(NOES 1981-1983)**



NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-17

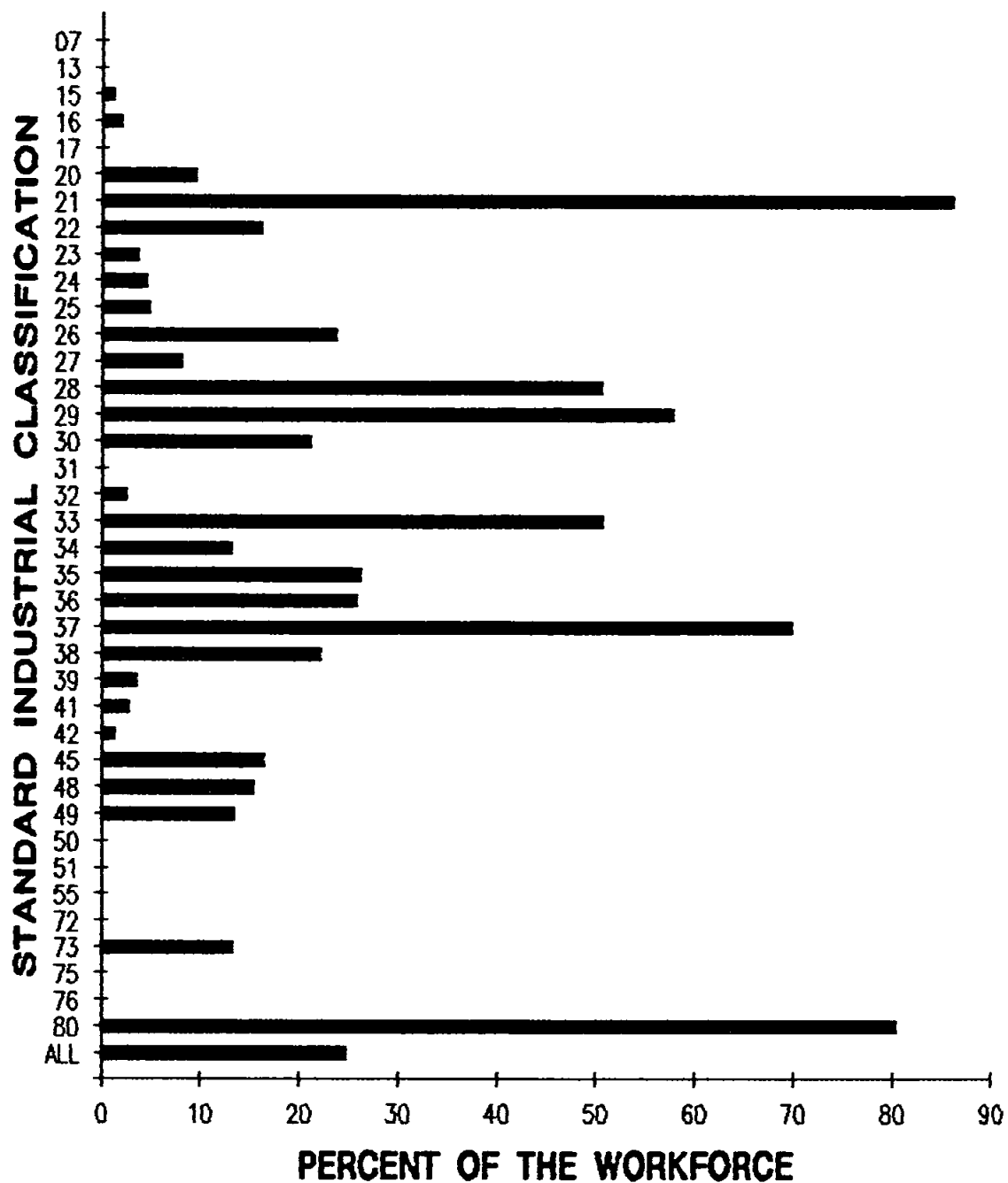
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 HAVE AN EMPLOYED PHYSICIAN ON SITE PART- OR FULL-TIME

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...
15-17	...	...	8* (5) 3.5%	8* (5) .0%	...	...	25350* (14094) 10.7%	25350* (14094) .8%
20-39	433* (167) .3%	908 (182) 2.9%	2100 (214) 33.5%	3440 (327) 1.8%	28979* (11386) .6%	280112 (58037) 4.4%	4565576 (390795) 55.2%	4874667 (399259) 25.3%
40-49	1361* (801) 2.6%	183* (99) 3.1%	85* (37) 18.1%	1629* (814) 2.7%	85119* (51353) 5.9%	62254* (33589) 5.4%	182651* (62824) 31.8%	330024* (93219) 10.4%
50-59	...	...	...	...	...	...	...	...
70-79	...	15* (13) .6%	134* (107) 37.8%	148* (107) .2%	...	7143* (6524) 1.5%	141717* (85968) 41.7%	148860* (85859) 6.8%
80	365* (253) 12.9%	999 (219) 46.1%	1779 (308) 86.3%	3143 (443) 44.5%	11889* (8264) 11.7%	287110 (64950) 53.7%	2647808 (359316) 87.6%	2946807 (350795) 80.5%
ALL	2159* (856) .5%	2104 (302) 4.2%	4106 (392) 43.5%	8369 (989) 1.6%	125987* (53245) 1.1%	636620 (93582) 6.5%	7563101 (541632) 60.7%	8325708 (546558) 24.9%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.



**FIGURE III - 20**  
**EMPLOYED PHYSICIAN ON SITE PART- OR FULL-TIME**  
**(NOES 1981-1983)**



## NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-18

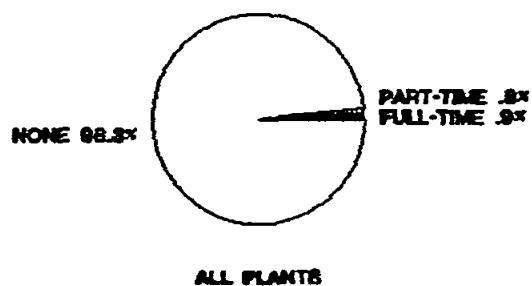
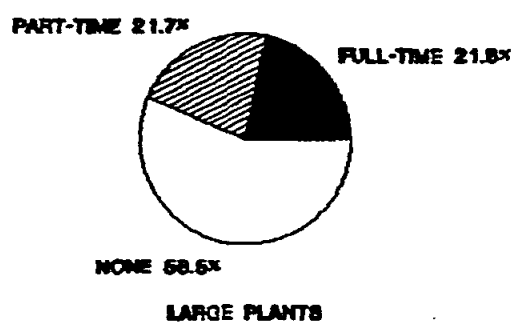
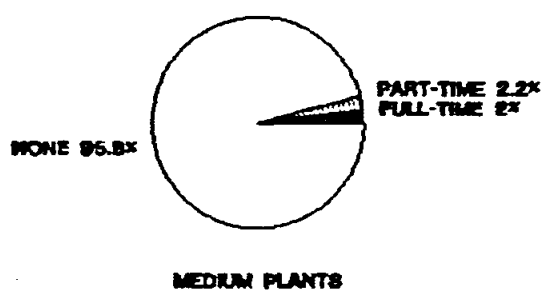
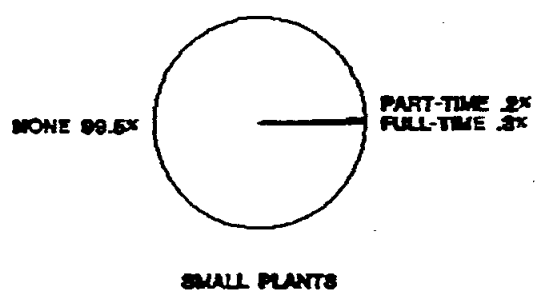
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
HAVE AN EMPLOYED PHYSICIAN ON SITE PART- OR FULL-TIME

SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---
15	---	---	3* (3) 2.5%	3* (3) .0%	---	---	12768* (11270) 9.5%	12768* (11270) 1.4%
16	---	---	5* (4) 4.7%	5* (4) .0%	---	---	12582* (11004) 12.4%	12582* (11004) 2.1%
17	---	---	---	---	---	---	---	---
20	---	17* (31) .5%	148* (71) 26.4%	164* (72) 1.1%	---	8023* (14699) 1.2%	143345* (56122) 29.1%	151369* (53513) 9.7%
21	4* (6) 14.6%	---	54* (34) 68.0%	58* (33) 53.3%	258* (345) 13.8%	---	98088* (66468) 87.5%	98346* (66339) 86.3%
22	---	49* (39) 3.1%	79* (57) 26.3%	128* (91) 2.7%	---	19487* (15373) 5.6%	97056* (63995) 37.2%	116543* (70762) 16.3%
23	---	---	47* (41) 19.4%	47* (41) .3%	---	---	47062* (40984) 22.6%	47062* (40984) 3.8%
24	---	---	12* (10) 11.5%	12* (10) .1%	---	---	27621* (22969) 29.9%	27621* (22969) 4.8%
25	---	15* (29) 1.4%	3* (4) 2.7%	18* (29) .3%	---	4952* (9618) 1.9%	20917* (22806) 17.0%	25869* (25877) 5.0%
26	60* (74) 1.5%	71* (62) 4.5%	94* (56) 43.7%	225* (122) 3.8%	4856* (6014) 3.5%	35265* (30477) 12.5%	109617* (64003) 53.0%	149739* (71951) 23.9%
27	---	---	61* (27) 19.3%	61* (27) .3%	---	---	98185* (30004) 28.4%	98185* (30004) 8.3%
28	111* (81) 1.8%	300* (111) 25.9%	222* (67) 58.4%	633 (125) 8.2%	8944* (7257) 4.9%	87333* (25020) 33.5%	369319* (99371) 77.5%	465597 (99221) 50.7%
29	---	35* (27) 11.8%	101* (42) 100.0%	136* (50) 9.7%	---	11069* (8773) 17.5%	117545* (70259) 100.0%	128614* (69792) 58.0%
30	---	6* (18) .4%	107* (64) 47.8%	114* (66) 1.3%	---	1241* (3423) .4%	158834* (74978) 68.0%	160075* (74780) 21.3%
31	---	---	---	---	---	---	---	---
32	115* (116) 1.3%	18* (20) 1.7%	3* (11) 1.9%	136* (121) 1.4%	3452* (3468) 1.5%	8209* (9255) 3.9%	3607* (11505) 2.8%	15269* (15530) 2.7%
33	---	158* (98) 10.8%	210* (58) 62.2%	368* (111) 6.2%	---	39611* (23845) 12.7%	505371 (88096) 81.3%	544982 (87942) 50.9%

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	56* (52) .3%	106* (59) 3.4%	104* (64) 30.1%	266* (100) 1.2%	4051* (3728) .7%	26385* (16654) 4.4%	170148* (97292) 48.5%	200584* (98889) 13.3%
35	42* (45) .2%	58* (40) 1.7%	301 (59) 38.4%	401 (77) 1.5%	3801* (4010) .6%	18869* (12658) 2.9%	605640 (100534) 54.4%	628310 (95698) 26.4%
36	44* (55) .6%	38* (35) 1.4%	173* (69) 22.0%	255* (117) 2.4%	3616* (4555) 1.6%	13038* (13189) 2.4%	494071* (146708) 41.8%	510725* (149778) 26.0%
37	...	26* (24) 2.2%	261 (57) 62.7%	287 (56) 5.1%	...	5290* (4892) 2.2%	1311363 (252118) 86.6%	1316653 (253430) 70.0%
38	...	11* (13) 1.1%	111* (75) 26.7%	122* (75) 3.0%	...	1338* (1609) .7%	168321* (111662) 36.6%	169659* (111487) 22.3%
39	...	...	10* (10) 3.0%	10* (10) .1%	...	...	19466* (18968) 9.3%	19466* (18968) 3.7%
41	202* (210) 4.6%	...	...	202* (210) 4.1%	5865* (6101) 5.0%	...	...	5865* (6101) 2.9%
42	...	...	7* (17) 8.4%	7* (17) .0%	...	...	12595* (30665) 16.8%	12595* (30665) 1.5%
45	...	...	26* (14) 18.0%	26* (14) .7%	...	...	74937* (57710) 28.4%	74937* (57710) 16.6%
48	486* (606) 3.3%	...	34* (21) 99.0%	519* (607) 3.3%	33989* (42440) 8.0%	...	70083* (43687) 100.0%	104072* (61528) 15.5%
49	673* (511) 8.2%	131* (96) 7.1%	18* (22) 10.3%	822* (510) 8.0%	45265* (33958) 16.8%	44077* (31925) 10.4%	25035* (31261) 17.1%	114377* (63388) 13.6%
50	...	...	...	...	...	...	...	...
51	...	...	...	...	...	...	...	...
55	...	...	...	...	...	...	...	...
72	...	...	...	...	...	...	...	...
73	...	15* (13) 1.0%	134* (107) 39.3%	148* (107) .8%	...	7143* (6524) 2.0%	141717* (85968) 43.1%	148860* (85859) 13.5%
75	...	...	...	...	...	...	...	...
76	...	...	...	...	...	...	...	...
80	365* (253) 12.9%	999 (219) 46.1%	1779 (308) 86.3%	3143 (443) 44.5%	11889* (8264) 11.7%	287110 (64950) 53.7%	2647808 (359316) 87.6%	2946807 (350795) 80.5%
All	2159* (846) .5%	2078 (241) 4.2%	4106 (393) 43.6%	8343 (1046) 1.6%	125987* (52253) 1.1%	627531 (76884) 6.4%	7563101 (514067) 60.7%	8316619 (529075) 25.0%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE III - 21**  
**PLANTS WITH AN EMPLOYED PHYSICIAN ON-SITE**  
**(NOES 1981-1983)**





<b>Figure III-23</b>	<b>Employed or contract physician on-site (by 2-digit SIC)</b>
<b>Table III-19</b>	<b>Number and percent of plants and employees in plants which have a contract or employed physician on-site at least part time (by major industrial group)</b>
<b>Table III-20</b>	<b>Number and percent of plants and employees in plants which have a contract or employed physician on-site at least part-time (by 2-digit SIC)</b>

- (2) **Response 17.1 or 17.3 - Presence of a contract physician to provide health care on-site, either located at the facility or available on-call from another location**

The estimates of the plants which provide at least part-time health care from contract physicians who are either available at the plant or on-call from another location, and the workers in those plants (by number and proportion of the totals) are displayed in Figures III-24 and III-25, and Tables III-21 and III-22.

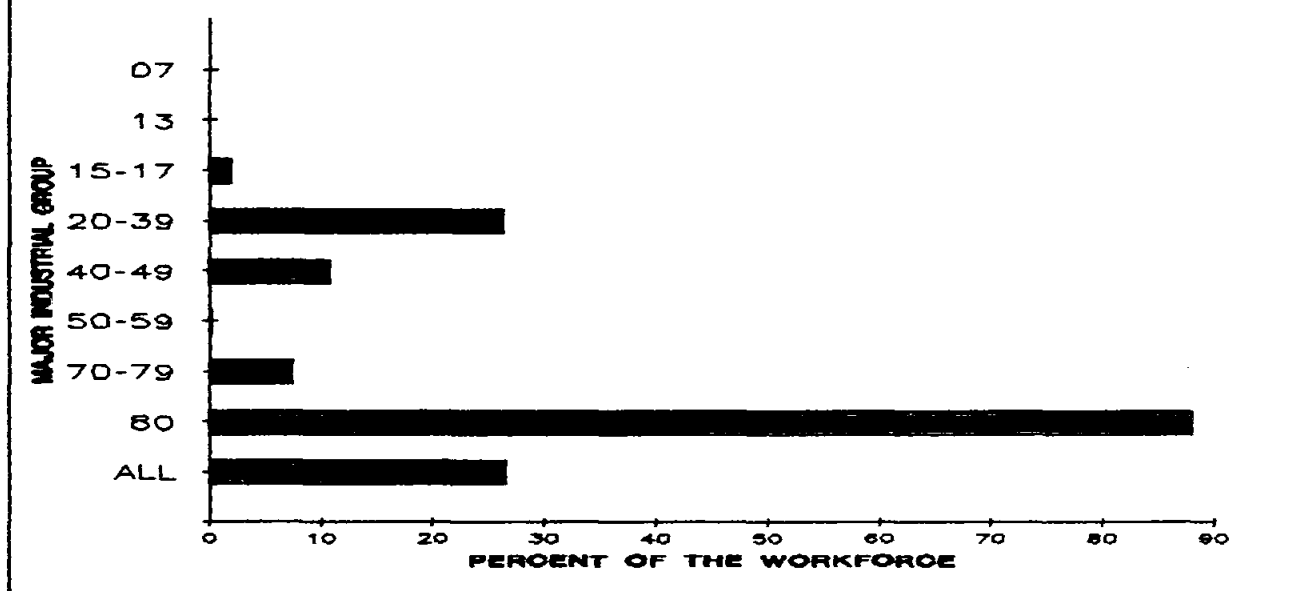
<b>Figure III-24</b>	<b>On-call or on-site contract physician (by major industrial group)</b>
<b>Figure III-25</b>	<b>On-call or on-site contract physician (by 2-digit SIC)</b>
<b>Table III-21</b>	<b>Number and percent of plants and employees in plants which have at least a part-time on-call or on-site contract physician (by major industrial group)</b>
<b>Table III-22</b>	<b>Number and percent of plants and employees in plants which have at least a part-time on-call or on-site contract physician (by 2-digit SIC)</b>

- (3) **Response 17.2 - Employee health care provided at an off-site location by contract medical sources**

The estimates of the plants which provide employee health care by contract at an off-site location, and the workers in those plants (by number and proportion of the totals) are displayed in Figures III-26, III-27 and III-28, and Tables III-23 and III-24.

<b>Figure III-26</b>	<b>Contract health care provided off-site (by major industrial group)</b>
<b>Figure III-27</b>	<b>Contract health care provided off-site (by 2-digit SIC)</b>
<b>Figure III-28</b>	<b>Plants providing health care by contract</b>
<b>Table III-23</b>	<b>Number and percent of plants and employees in plants which have health care provided at an off-site location (by major industrial group)</b>
<b>Table III-24</b>	<b>Number and percent of plants and employees in plants which have health care provided at an off-site location (by 2-digit SIC)</b>

**FIGURE III - 22**  
**EMPLOYED OR CONTRACT PHYSICIAN ON-SITE**  
**(NOES 1981-1983)**



NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-19

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 HAVE A CONTRACT OR EMPLOYED PHYSICIAN ON SITE AT LEAST PART-TIME

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...
15-17	117* (118) .1%	...	25* (29) 10.5%	142* (116) .1%	9345* (9431) .4%	...	53942* (36205) 22.9%	63286* (35565) 2.1%
20-39	467* (178) .3%	1144 (153) 3.6%	2190 (212) 34.9%	3800 (346) 2.0%	31679* (11995) .7%	333511 (52829) 5.2%	4726749 (394014) 57.2%	5091939 (405481) 26.4%
40-49	1361* (801) 2.6%	227* (127) 3.9%	85* (37) 18.1%	1672* (820) 2.8%	85119* (51353) 5.9%	75289* (43224) 6.5%	182651* (62824) 31.8%	343059* (98582) 10.9%
50-59	221* (223) .4%	...	...	221* (223) .4%	3316* (3348) .3%	...	...	3316* (3348) .2%
70-79	...	89* (58) 3.8%	134* (107) 37.8%	223* (113) .3%	...	25136* (15145) 5.4%	141717* (85968) 41.7%	166853* (84932) 7.6%
80	465* (261) 16.4%	1254 (241) 57.9%	1906 (313) 92.5%	3626 (430) 51.3%	19473* (9813) 19.2%	372158 (77540) 69.6%	2836822 (361301) 93.9%	3228452 (350076) 88.2%
ALL	2630* (897) .6%	2714 (318) 5.4%	4340 (396) 46.0%	9684 (1027) 1.9%	148931* (54566) 1.3%	806094 (104408) 8.2%	7941880 (546291) 63.7%	8896905 (552427) 26.6%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
HAVE A CONTRACT OR EMPLOYED PHYSICIAN ON SITE AT LEAST PART-TIME

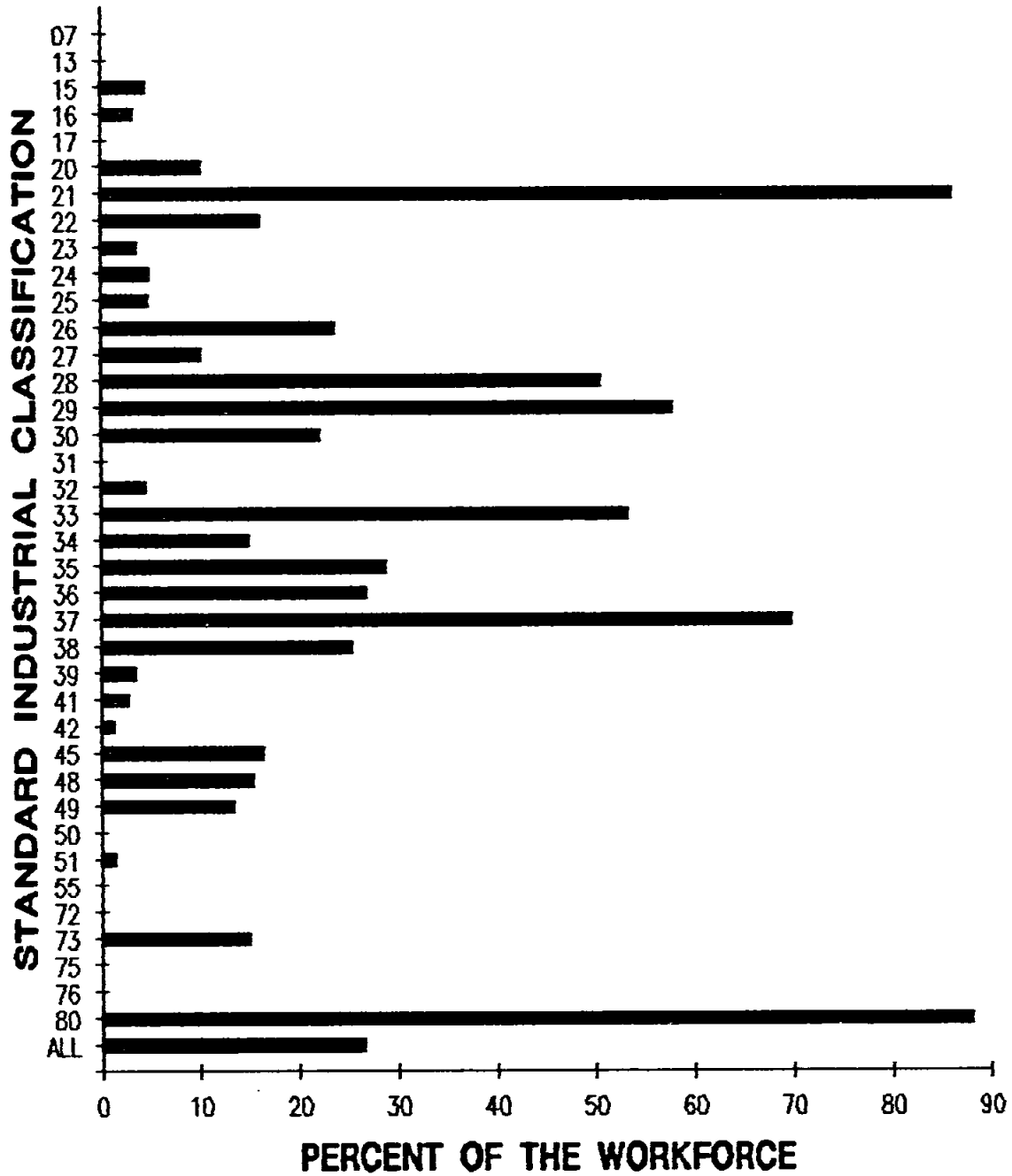
SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...
15	117* (118) .5%	...	8* (5) 6.2%	125* (117) .5%	9345* (9431) 1.7%	...	32925* (20856) 24.4%	42270* (21339) 4.7%
16	...	...	17* (28) 15.9%	17* (28) .1%	...	...	21017* (21480) 20.8%	21017* (21480) 3.5%
17	...	...	...	...	...	...	...	...
20	...	17* (31) .5%	150* (71) 26.9%	167* (72) 1.1%	...	8023* (14699) 1.2%	151616* (55181) 30.8%	159639* (52866) 10.3%
21	4* (6) 14.6%	...	54* (34) 68.0%	58* (33) 53.3%	258* (345) 13.8%	...	98088* (66468) 87.5%	98346* (66339) 86.3%
22	...	49* (39) 3.1%	79* (57) 26.3%	128* (91) 2.7%	...	19487* (15373) 5.6%	97056* (63995) 37.2%	116543* (70762) 16.3%
23	...	...	47* (41) 19.4%	47* (41) .3%	...	...	47062* (40984) 22.6%	47062* (40984) 3.8%
24	...	9* (8) .8%	12* (10) 11.5%	21* (6) .2%	...	2141* (1963) 1.2%	27621* (22969) 29.9%	29762* (21403) 5.1%
25	...	15* (29) 1.4%	3* (4) 2.7%	18* (29) .3%	...	4952* (9618) 1.9%	20917* (22806) 17.0%	25869* (25877) 5.0%
26	60* (74) 1.5%	71* (62) 4.5%	94* (56) 43.7%	225* (122) 3.8%	4856* (6014) 3.5%	35265* (30477) 12.5%	109617* (64003) 53.0%	149739* (71951) 23.9%
27	34* (44) .2%	...	65* (27) 20.7%	99* (49) .5%	2700* (3560) .6%	...	118811* (36078) 34.4%	121511* (35142) 10.3%
28	111* (81) 1.8%	300* (111) 25.9%	222* (67) 58.4%	633 (125) 8.2%	8944* (7257) 4.9%	87333* (25020) 33.5%	369319* (99371) 77.5%	465597 (99221) 50.7%
29	...	35* (27) 11.8%	101* (42) 100.0%	136* (50) 9.7%	...	11069* (8773) 17.5%	117545* (70259) 100.0%	128614* (69792) 58.0%
30	...	6* (18) .4%	116* (62) 51.7%	122* (65) 1.4%	...	1241* (3423) .4%	166533* (71907) 71.3%	167774* (71758) 22.3%
31	...	...	...	...	...	...	...	...
32	115* (116) 1.3%	22* (23) 2.1%	13* (22) 7.1%	150* (122) 1.5%	3452* (3468) 1.5%	9783* (10570) 4.7%	14264* (23309) 11.1%	27500* (26382) 4.8%
33	...	212* (110) 14.4%	233* (59) 69.1%	445* (119) 7.5%	...	53200* (26645) 17.1%	519379 (86279) 83.6%	572579 (85935) 53.5%



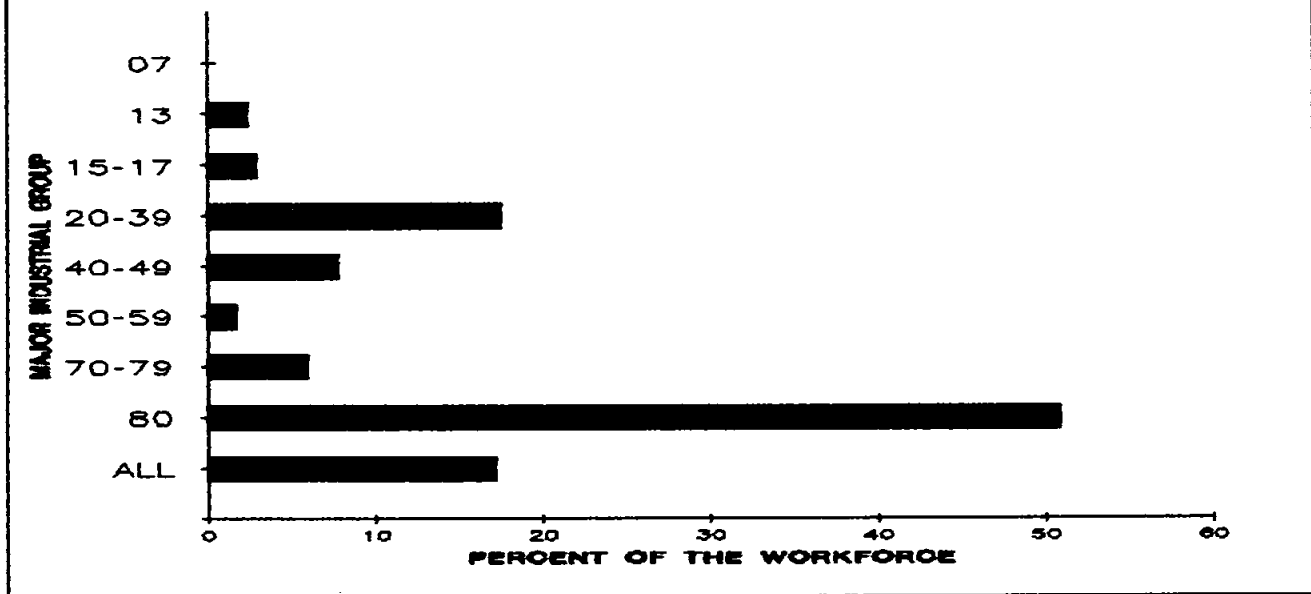
SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	56* (52) .3%	249* (89) 8.0%	104* (64) 30.1%	409* (105) 1.9%	4051* (3728) .7%	54293* (22438) 9.1%	170148* (97292) 48.5%	228492* (95894) 15.2%
35	42* (45) .2%	58* (40) 1.7%	323 (60) 41.1%	423 (79) 1.6%	3801* (4010) .6%	18869* (12658) 2.9%	667842 (114933) 60.0%	690513 (110136) 29.0%
36	44* (55) .6%	64* (33) 2.4%	179* (71) 22.8%	287* (118) 2.7%	3616* (4555) 1.6%	21225* (13672) 3.8%	506715* (152175) 42.9%	531557* (155313) 27.0%
37	...	26* (24) 2.2%	261 (57) 62.7%	287 (56) 5.1%	...	5290* (4892) 2.2%	1311363 (252118) 86.6%	1316653 (253430) 70.0%
38	...	11* (13) 1.1%	124* (60) 29.8%	135* (60) 3.3%	...	1338* (1609) .7%	193387* (86350) 42.0%	194725* (86197) 25.6%
39	...	...	10* (10) 3.0%	10* (10) .1%	...	...	19466* (18968) 9.3%	19466* (18968) 3.7%
41	202* (210) 4.6%	...	...	202* (210) 4.1%	5865* (6101) 5.0%	...	...	5865* (6101) 2.9%
42	...	...	7* (17) 8.4%	7* (17) .0%	...	...	12595* (30665) 16.8%	12595* (30665) 1.5%
45	...	...	26* (14) 18.0%	26* (14) .7%	...	...	74937* (57710) 28.4%	74937* (57710) 16.6%
48	486* (606) 3.3%	...	34* (21) 99.0%	519* (607) 3.3%	33989* (42440) 8.0%	...	70083* (43687) 100.0%	104072* (61528) 15.5%
49	673* (511) 8.2%	131* (96) 7.1%	18* (22) 10.3%	822* (510) 8.0%	45265* (33958) 16.8%	44077* (31925) 10.4%	25035* (31261) 17.1%	114377* (63388) 13.6%
50	...	...	...	...	...	...	...	...
51	221* (223) 2.4%	...	...	221* (223) 2.4%	3316* (3348) 1.8%	...	...	3316* (3348) 1.6%
55	...	...	...	...	...	...	...	...
72	...	...	...	...	...	...	...	...
73	...	89* (58) 6.0%	134* (107) 39.3%	223* (113) 1.2%	...	25136* (15145) 7.2%	141717* (85968) 43.1%	166853* (84932) 15.2%
75	...	...	...	...	...	...	...	...
76	...	...	...	...	...	...	...	...
80	465* (261) 16.4%	1254 (241) 57.9%	1906 (313) 92.5%	3626 (430) 51.3%	19473* (9813) 19.2%	372158 (77540) 69.6%	2836822 (361301) 93.9%	3228452 (350076) 88.2%
All	2630* (920) .6%	2666 (318) 5.4%	4340 (400) 46.0%	9636 (1113) 1.9%	148931* (58351) 1.4%	790488 (100272) 8.1%	7941880 (534541) 63.7%	8881299 (553724) 26.7%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE III - 23**  
**EMPLOYED OR CONTRACT PHYSICIAN ON-SITE**  
**(NOES 1981-1983)**



**FIGURE III - 24**  
**ON-CALL OR ON-SITE CONTRACT PHYSICIAN**  
**(NOES 1981-1983)**



NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-21

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 HAVE AT LEAST A PART-TIME ON-CALL OR ON-SITE CONTRACT PHYSICIAN

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	...	...	...	...	...	...	...	...
13	63* (56) .7%	32* (29) 3.1%	...	95* (60) 1.0%	3160* (2805) 1.5%	7071* (6377) 4.1%	...	10231* (6621) 2.5%
15-17	418* (382) .4%	88* (65) 2.1%	22* (29) 9.1%	528* (396) .5%	19794* (14156) .9%	31435* (24274) 4.3%	41174* (37548) 17.4%	92403* (45024) 3.0%
20-39	4289 (901) 2.8%	2622 (331) 8.3%	1411 (197) 22.5%	8322 (1022) 4.4%	165324 (30872) 3.6%	615233 (78262) 9.6%	2607967 (298945) 31.6%	3388524 (299120) 17.6%
40-49	457* (300) .9%	491* (146) 8.4%	65* (70) 13.8%	1012* (338) 1.7%	13640* (8962) 1.0%	123558* (44457) 10.7%	111703* (85750) 19.5%	248901* (77751) 7.9%
50-59	1544* (704) 2.6%	...	...	1544* (704) 2.5%	28325* (13138) 2.5%	...	...	28325* (13138) 1.8%
70-79	...	155* (99) 6.6%	126* (101) 35.5%	280* (133) .4%	...	26814* (16442) 5.8%	106519* (75974) 31.4%	133333* (75082) 6.1%
80	327* (246) 11.5%	819 (147) 37.8%	1059 (249) 51.4%	2206 (415) 31.2%	18508* (12604) 18.2%	258233 (50197) 48.3%	1587918 (305992) 52.5%	1864659 (308479) 51.0%
ALL	7099 (1268) 1.6%	4207 (409) 8.4%	2682 (342) 28.4%	13987 (1416) 2.7%	248750 (39662) 2.2%	1062345 (107338) 10.8%	4455281 (444448) 35.7%	5766376 (445599) 17.3%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

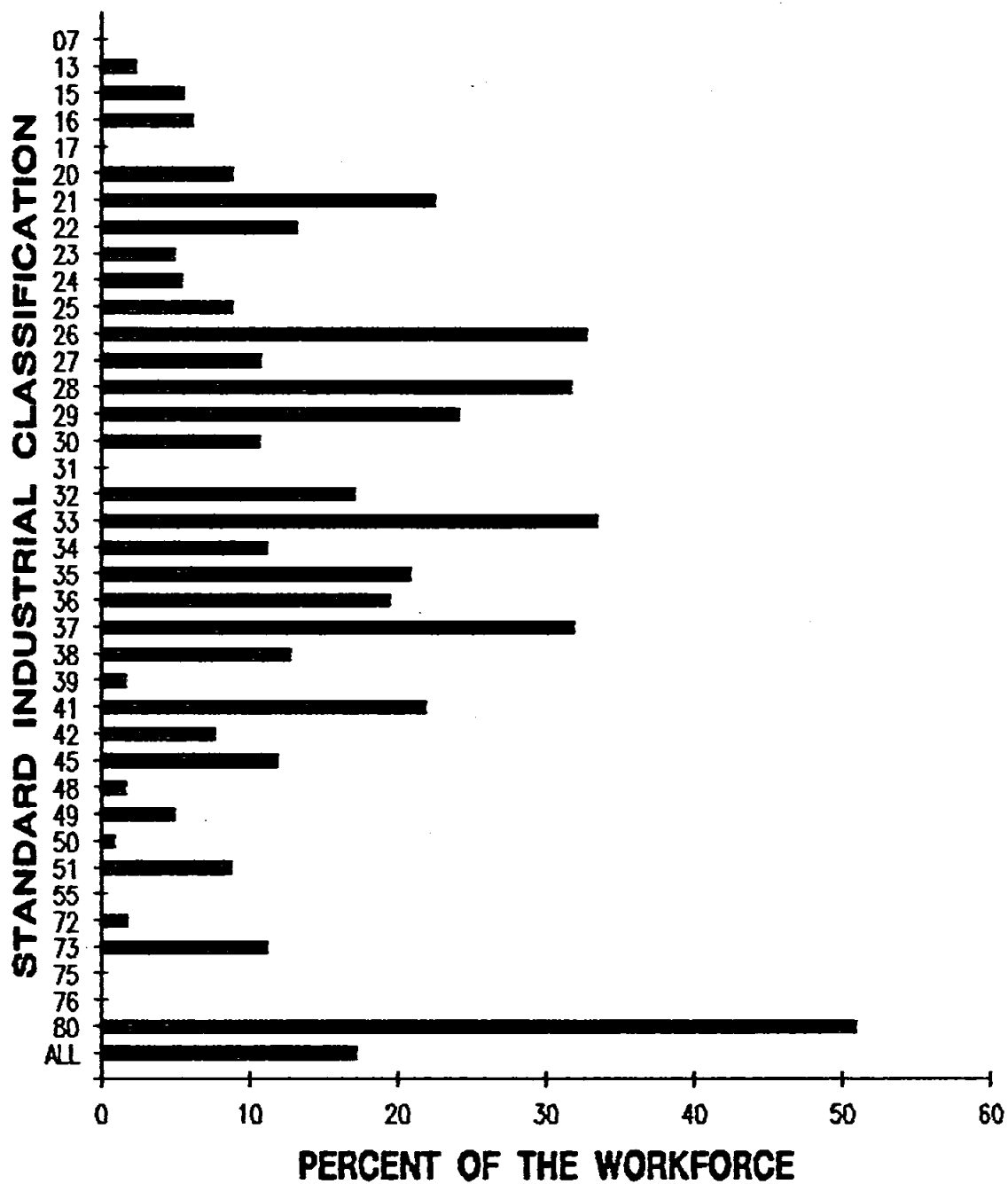
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
HAVE AT LEAST A PART-TIME ON-CALL OR ON-SITE CONTRACT PHYSICIAN

SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	...	...	...	...	...	...	...	...
13	63* (56) .7%	32* (29) 3.1%	...	95* (60) 1.0%	3160* (2805) 1.5%	7071* (6377) 4.1%	...	10231* (6621) 2.5%
15	117* (118) .5%	56* (57) 5.0%	5* (5) 3.7%	177* (136) .7%	9345* (9431) 1.7%	21769* (22236) 11.0%	20157* (21701) 15.0%	51270* (31808) 5.7%
16	78* (60) .7%	32* (30) 2.9%	17* (28) 15.9%	127* (65) 1.0%	6657* (5190) 2.3%	9667* (8879) 4.7%	21017* (21480) 20.8%	37341* (18100) 6.3%
17	224* (262) .4%	...	...	224* (262) .4%	3791* (3977) .3%	...	...	3791* (3977) .2%
20	541* (362) 4.7%	259* (147) 8.0%	78* (45) 13.9%	878* (370) 5.8%	13310* (8384) 3.4%	68934* (34669) 10.2%	57802* (25613) 11.8%	140046* (36767) 9.0%
21	...	...	3* (4) 4.1%	3* (4) 3.0%	...	...	25744* (28069) 23.0%	25744* (28069) 22.6%
22	...	147* (69) 9.2%	66* (56) 22.2%	213* (110) 4.4%	...	48648* (23138) 14.0%	46243* (37959) 17.7%	94891* (56009) 13.3%
23	449* (224) 3.6%	129* (106) 4.2%	16* (33) 6.5%	594* (277) 3.7%	21382* (12804) 5.0%	25839* (19319) 4.2%	15695* (32608) 7.5%	62916* (39524) 5.1%
24	245* (213) 2.3%	201* (83) 17.5%	...	446* (238) 3.7%	8730* (7111) 2.9%	23710* (10241) 12.9%	...	32440* (15174) 5.6%
25	...	26* (43) 2.5%	21* (17) 17.4%	47* (42) .9%	...	10275* (16813) 4.0%	36223* (28020) 29.4%	46498* (28716) 9.0%
26	149* (109) 3.6%	249* (105) 15.9%	100* (58) 46.9%	498* (175) 8.5%	13062* (9533) 9.5%	75553* (36249) 26.8%	117563* (68711) 56.8%	206177* (79237) 32.9%
27	625* (243) 3.4%	82* (56) 4.4%	43* (26) 13.5%	749* (280) 3.7%	31076* (11907) 6.5%	16943* (13338) 4.7%	81648* (40067) 23.6%	129666* (47048) 10.9%
28	346* (190) 5.6%	180* (89) 15.6%	144* (81) 37.9%	670* (189) 8.7%	14520* (7137) 8.0%	56190* (24828) 21.5%	220734* (124395) 46.3%	291444* (129751) 31.8%
29	...	112* (123) 38.3%	39* (38) 38.7%	151* (125) 10.8%	...	12657* (14169) 20.0%	41181* (57619) 35.0%	53838* (59142) 24.3%
30	71* (58) 1.1%	245* (146) 16.0%	32* (29) 14.1%	347* (158) 4.1%	4638* (3524) 2.1%	36098* (19778) 12.3%	40709* (34268) 17.4%	81445* (40755) 10.8%
31	...	...	...	...	...	...	...	...
32	258* (209) 2.9%	71* (55) 7.0%	96* (54) 52.2%	425* (230) 4.3%	11195* (7255) 4.7%	20795* (14621) 10.0%	66755* (36399) 51.8%	98745* (33839) 17.2%
33	...	272* (96) 18.5%	136* (49) 40.3%	408* (116) 6.9%	...	78435* (28419) 25.2%	281824* (74013) 45.3%	360259* (82347) 33.6%

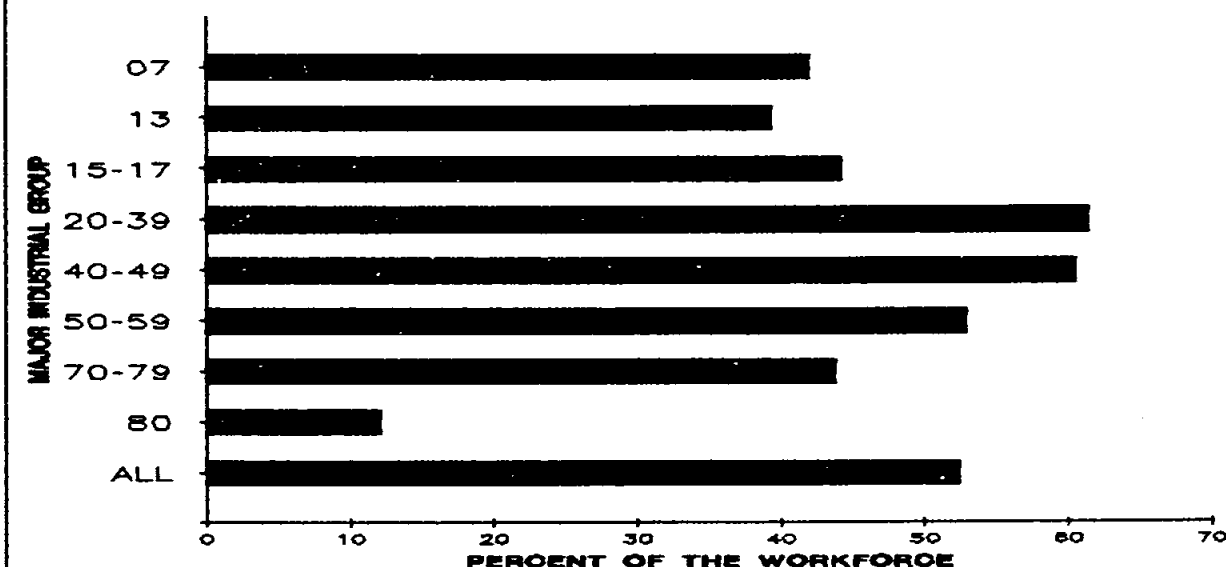
SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	636* (383) 3.4%	400 (99) 12.8%	29* (27) 8.3%	1065* (399) 4.8%	17416* (8076) 3.1%	83303* (24622) 14.0%	68789* (50719) 19.6%	169508* (61229) 11.3%
35	110* (110) .5%	131* (67) 3.8%	277* (80) 35.3%	518* (174) 1.9%	2426* (2426) .4%	20484* (10527) 3.1%	477244* (150595) 42.9%	500154* (152544) 21.0%
36	335* (249) 4.7%	93* (56) 3.5%	147* (58) 18.7%	575* (284) 5.4%	12424* (9299) 5.4%	25480* (16973) 4.6%	347289* (129211) 29.4%	385192* (134647) 19.6%
37	81* (84) 2.0%	...	135 (33) 32.3%	216* (80) 3.9%	4868* (5020) 3.8%	...	597030 (134289) 39.4%	601898 (134552) 32.0%
38	207* (195) 7.7%	13* (19) 1.4%	51* (51) 12.2%	272* (201) 6.7%	6349* (5250) 6.1%	6317* (8782) 3.2%	85496* (83074) 18.6%	98162* (82754) 12.9%
39	235* (210) 3.6%	12* (31) 1.5%	...	246* (224) 3.2%	3928* (3528) 2.4%	5572* (14762) 3.7%	...	9500* (16474) 1.8%
41	316* (222) 7.1%	180* (66) 35.3%	...	496* (239) 10.1%	9273* (6467) 7.9%	34456* (26114) 42.3%	...	43729* (27180) 22.0%
42	141* (141) .7%	112* (81) 7.5%	29* (20) 34.8%	281* (220) 1.3%	4367* (4367) .9%	20857* (15778) 8.1%	39148* (33907) 52.3%	64372* (37923) 7.8%
45	...	...	6* (7) 3.9%	6* (7) .1%	...	...	54130* (69298) 20.5%	54130* (69298) 12.0%
48	...	48* (50) 5.3%	...	48* (50) .3%	...	12246* (12676) 6.9%	...	12246* (12676) 1.8%
49	...	55* (50) 3.0%	30* (72) 17.6%	86* (80) .8%	...	24787* (22555) 5.8%	18424* (43651) 12.6%	43211* (45439) 5.1%
50	426* (391) 1.4%	...	...	426* (391) 1.3%	9375* (8598) 1.5%	...	...	9375* (8598) 1.0%
51	1118* (609) 12.3%	...	...	1118* (609) 12.0%	18950* (10458) 10.2%	...	...	18950* (10458) 8.9%
55	...	...	...	...	...	...	...	...
72	...	80* (80) 11.9%	...	80* (80) .4%	...	8821* (8829) 10.7%	...	8821* (8829) 1.9%
73	...	75* (57) 5.0%	126* (101) 36.8%	200* (104) 1.1%	...	17993* (13750) 5.1%	106519* (75974) 32.4%	124512* (74506) 11.3%
75	...	...	...	...	...	...	...	...
76	...	...	...	...	...	...	...	...
80	327* (246) 11.5%	819 (147) 37.8%	1059 (249) 51.4%	2206 (415) 31.2%	18508* (12604) 18.2%	258233 (50197) 48.3%	1587918 (305992) 52.5%	1864659 (308479) 51.0%
All	7099 (1170) 1.6%	4159 (429) 8.4%	2682 (460) 28.5%	13940 (1315) 2.8%	248750 (37936) 2.3%	1046739 (107502) 10.7%	4455281 (514655) 35.8%	5750770 (484927) 17.3%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE III - 25**  
**ON-CALL OR ON-SITE CONTRACT PHYSICIAN**  
 (NOES 1981-1983)



**FIGURE III - 26**  
**CONTRACT HEALTH CARE PROVIDED OFF-SITE**  
**(NOES 1981-1983)**



NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-23

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 HAVE HEALTH CARE PROVIDED AT AN OFF-SITE LOCATION

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	2001* (916) 36.0%	70* (67) 100.0%	...	2071* (892) 36.8%	39749* (22123) 38.3%	7009* (6680) 100.0%	...	46758* (20611) 42.2%
13	4476* (1350) 52.1%	331* (179) 32.5%	...	4806* (1367) 49.7%	109626* (32051) 52.5%	54027* (24522) 31.1%	...	163654* (41550) 39.5%
15-17	32706 (2335) 34.7%	2615 (406) 63.1%	195* (127) 80.7%	35516 (2306) 36.0%	776489 (59309) 37.0%	409883 (73281) 55.6%	178920* (101037) 75.8%	1365291 (118087) 44.4%
20-39	84417 (3551) 55.1%	23386 (1550) 73.6%	4218 (252) 67.3%	112022 (4083) 58.6%	2793056 (85275) 60.5%	4704043 (342055) 73.7%	4374305 (188240) 52.9%	11871403 (425301) 61.6%
40-49	24486 (2541) 46.1%	4019 (729) 68.8%	328* (93) 70.2%	28834 (2616) 48.5%	750869 (93443) 52.4%	800006 (157361) 69.4%	367126* (104103) 64.0%	1918001 (213476) 60.7%
50-59	23574 (2301) 40.4%	1868* (563) 70.2%	...	25442 (2316) 41.7%	535220 (53729) 47.6%	279351* (81457) 68.3%	...	814571 (97974) 53.1%
70-79	27190 (3185) 37.2%	1267 (267) 54.0%	136* (58) 38.3%	28593 (3214) 37.7%	563578 (72506) 40.5%	255176 (42216) 54.9%	148984* (62497) 43.9%	967738 (93119) 44.0%
80	710* (346) 25.0%	509* (157) 23.5%	192* (69) 9.3%	1411* (356) 20.0%	24939* (10030) 24.5%	108137* (33438) 20.2%	317476* (94301) 10.5%	450552 (94379) 12.3%
ALL	199561 (6537) 44.4%	34065 (1883) 68.1%	5069 (310) 53.7%	238695 (6879) 46.9%	5593526 (171121) 50.5%	6617632 (396631) 67.1%	5386810 (263208) 43.2%	17597968 (519352) 52.7%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
HAVE HEALTH CARE PROVIDED AT AN OFF-SITE LOCATION

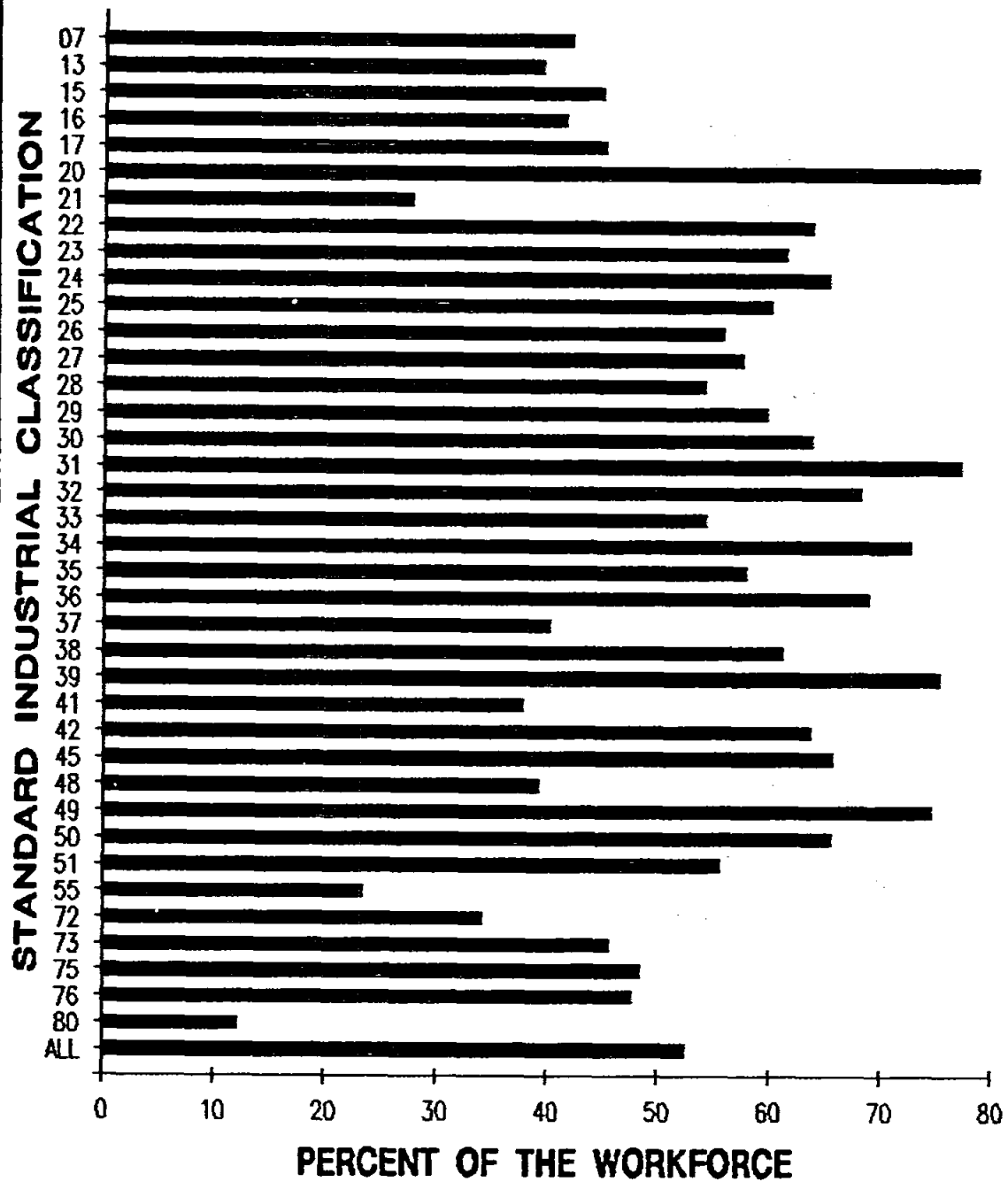
SIC CODE	PLANTS			TOTAL	EMPLOYEES			TOTAL
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)		SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	
07	2001* (916) 36.0%	70* (67) 100.0%	...	2071* (892) 36.8%	39749* (22123) 38.3%	7009* (6680) 100.0%	...	46758* (20611) 42.2%
13	4476* (1350) 52.1%	331* (179) 32.5%	...	4806* (1367) 49.7%	109626* (32051) 52.5%	54027* (24522) 31.1%	...	163654* (41550) 39.5%
15	7427 (997) 29.8%	943 (193) 85.2%	105* (101) 77.9%	8475 (1065) 32.4%	162831 (25503) 28.9%	141212 (26128) 71.2%	98679* (77088) 73.2%	402722 (88302) 45.0%
16	3766* (1128) 33.4%	491* (181) 43.9%	90* (57) 84.3%	4347* (1181) 34.7%	94400* (26477) 33.2%	72262* (30425) 34.8%	80241* (48892) 79.2%	246903* (72687) 41.6%
17	21514 (2351) 37.0%	1181* (307) 61.5%	...	22694 (2330) 37.8%	519258 (57797) 41.5%	196408* (55994) 59.3%	...	715666 (67610) 45.2%
20	6815 (641) 59.7%	2598 (355) 80.8%	482 (111) 86.2%	9895 (807) 65.2%	252387 (19171) 65.0%	536021 (88762) 79.6%	433973 (100568) 88.2%	1222381 (119372) 78.7%
21	26* (42) 86.5%	...	32* (61) 41.0%	58* (72) 53.5%	1608* (2605) 86.2%	...	30064* (47020) 26.8%	31672* (46881) 27.8%
22	1346 (291) 45.9%	1073 (182) 67.6%	203* (74) 67.8%	2622 (423) 54.4%	57308 (10693) 54.0%	217079 (33310) 62.5%	182088* (77292) 69.7%	456475 (88437) 63.9%
23	4341 (487) 34.7%	2088 (227) 67.3%	227* (91) 93.7%	6656 (599) 42.0%	164938 (20020) 38.9%	406632 (38634) 66.7%	192742* (76875) 92.5%	764312 (100040) 61.5%
24	4462 (835) 41.7%	831 (166) 72.4%	97* (73) 93.5%	5390 (943) 45.1%	153046 (27618) 50.4%	141633 (30338) 77.1%	84209* (52011) 91.2%	378888 (80540) 65.4%
25	2178 (408) 52.3%	735 (115) 69.2%	82* (74) 69.0%	2995 (462) 56.0%	75118 (10870) 54.0%	167634 (29765) 65.4%	69558* (62426) 56.6%	312310 (68610) 60.2%
26	2738 (551) 66.6%	987 (218) 62.9%	114* (49) 53.2%	3838 (583) 65.1%	103757 (18601) 75.4%	156891 (37279) 55.7%	89302* (40042) 43.2%	349949 (53238) 55.9%
27	6280 (1205) 34.7%	1285 (180) 68.6%	223* (88) 70.6%	7789 (1281) 38.4%	188553 (28246) 39.4%	266274 (47702) 73.8%	227627* (76483) 65.8%	682454 (113431) 57.6%
28	3686 (517) 59.7%	898 (139) 77.4%	214* (73) 56.4%	4799 (504) 62.2%	129772 (11938) 71.8%	182189 (34373) 69.8%	185136* (60516) 38.9%	497097 (65117) 54.2%
29	487* (262) 48.2%	181* (75) 61.9%	55* (33) 54.8%	724* (287) 51.5%	31048* (16064) 75.8%	50598* (20286) 80.0%	50954* (29743) 43.3%	132600* (43859) 59.8%
30	4478 (870) 66.7%	1076 (254) 70.0%	123* (50) 55.0%	5677 (966) 67.0%	159530 (23868) 70.9%	205859* (52001) 69.9%	115969* (42015) 49.6%	481358 (61019) 63.9%
31	470* (230) 50.5%	410* (122) 72.1%	25* (24) 100.0%	906* (272) 59.4%	14172* (6084) 56.9%	106195* (35330) 78.4%	15664* (16901) 100.0%	136031* (39441) 77.3%
32	5521 (898) 62.8%	778 (153) 76.8%	88* (54) 47.7%	6387 (945) 63.9%	162702 (20023) 68.6%	167391 (33698) 80.1%	62238* (42004) 48.2%	392331 (50140) 68.2%
33	2760 (409) 66.8%	1006 (196) 68.6%	184* (46) 54.7%	3951 (487) 66.5%	98463 (13191) 71.1%	193821 (46061) 62.3%	289287 (66071) 46.5%	581570 (71378) 54.3%



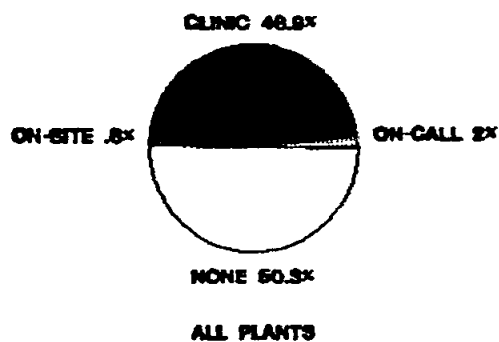
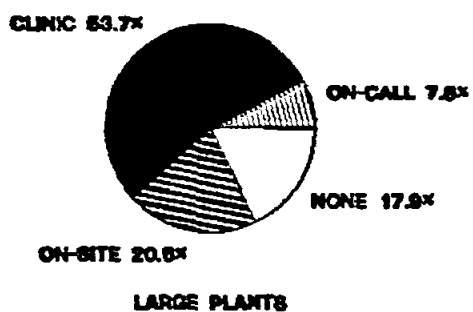
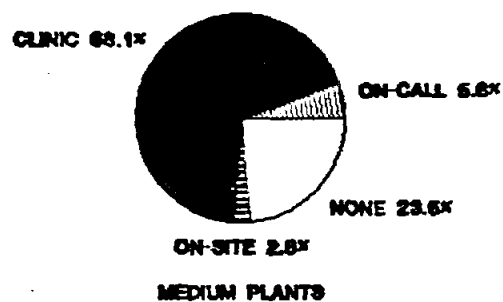
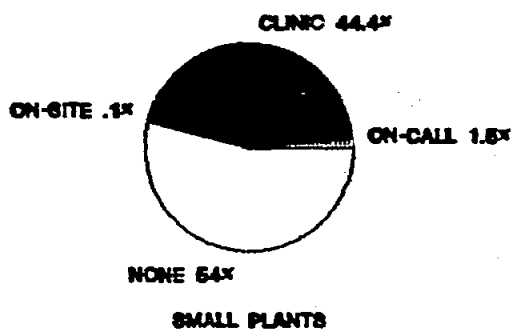
SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	12849 (1261) 69.4%	2270 (225) 72.7%	259 (64) 74.7%	15378 (1264) 69.9%	410155 (30072) 73.9%	456314 (43092) 76.5%	226719* (57299) 64.6%	1093189 (74019) 72.8%
35	15364 (1212) 67.8%	2742 (143) 80.5%	400 (98) 51.0%	18506 (1166) 69.0%	403482 (20096) 66.5%	536384 (21817) 81.1%	440163* (114198) 39.5%	1380029 (119787) 58.0%
36	3105 (526) 43.7%	2172 (125) 80.9%	617* (162) 78.3%	5893 (544) 55.7%	135714 (18429) 58.9%	447231 (24268) 80.9%	774469 (144944) 65.5%	1357414 (148264) 69.1%
37	2364* (596) 59.5%	1031 (115) 86.7%	180* (78) 43.3%	3575 (626) 64.1%	86821 (15181) 68.4%	218530 (25473) 91.4%	454973* (145119) 30.1%	760324 (143027) 40.4%
38	1454 (327) 54.1%	739 (136) 77.2%	285* (139) 68.4%	2478 (389) 61.0%	61678 (8758) 59.0%	144299 (27060) 74.2%	259267* (115894) 56.3%	465245* (127549) 61.3%
39	3691 (653) 56.3%	486* (953) 60.9%	328* (217) 97.0%	4505* (1192) 58.6%	102804 (18364) 62.0%	103066* (202856) 69.0%	189904* (119941) 90.7%	395774* (193855) 75.4%
41	2201* (731) 49.8%	92* (79) 18.0%	...	2292* (753) 46.5%	60111* (19329) 51.1%	15395* (13204) 18.9%	...	75506* (26373) 37.9%
42	10926 (1714) 54.6%	973 (217) 65.7%	32* (26) 39.1%	11931 (1747) 55.3%	322149 (55501) 66.0%	177534* (46360) 68.6%	25199* (21152) 33.7%	524881 (75802) 63.9%
45	1304* (683) 40.2%	396* (311) 67.1%	123* (56) 83.7%	1823* (738) 45.8%	42606* (21808) 55.0%	54057* (42037) 49.4%	200231* (88237) 75.8%	296895* (97733) 65.8%
48	3444* (1232) 23.4%	523* (233) 58.0%	19* (16) 56.8%	3987* (1294) 25.5%	123812* (61892) 29.1%	104037* (40322) 59.0%	37029* (29526) 52.8%	264879* (93352) 39.4%
49	5358* (1499) 65.2%	1632* (536) 87.7%	121* (67) 70.0%	7112 (1756) 69.4%	163729* (47051) 60.8%	378368* (147496) 88.9%	86656* (49101) 59.1%	628753* (177489) 74.7%
50	13321 (2269) 43.9%	1631* (457) 90.5%	...	14952 (2295) 46.5%	347844 (61260) 55.2%	252339* (73612) 89.1%	...	600183 (101387) 65.7%
51	4430* (1171) 48.6%	237* (237) 100.0%	...	4667* (1252) 49.9%	91139* (23262) 49.3%	27013* (27013) 100.0%	...	118151* (42295) 55.7%
55	5822 (1322) 30.8%	...	...	5822 (1322) 29.8%	96237* (25454) 31.1%	...	...	96237* (25454) 23.6%
72	4668* (1546) 22.6%	311* (124) 46.0%	13* (19) 100.0%	4992* (1562) 23.4%	111312* (34318) 29.3%	40456* (18114) 49.2%	10670* (15114) 100.0%	162438* (51115) 34.3%
73	6531 (1232) 39.4%	774 (193) 52.0%	122* (52) 35.9%	7427 (1237) 40.4%	182963 (36994) 43.4%	182141 (31924) 52.1%	138314* (59138) 42.1%	503418 (75514) 45.8%
75	12461 (2858) 47.6%	59* (60) 99.7%	...	12520 (2871) 47.7%	196521 (43420) 47.6%	8238* (8380) 100.0%	...	204759 (45332) 48.6%
76	3530* (1013) 36.2%	123* (94) 100.0%	...	3653* (1041) 37.0%	72782 (18183) 40.8%	24341* (19716) 100.0%	...	97123* (29777) 47.9%
80	710* (346) 25.0%	509* (157) 23.5%	192* (69) 9.3%	1411* (356) 20.0%	24939* (10030) 24.5%	108137* (33438) 20.2%	317476* (94301) 10.5%	450552 (94379) 12.3%
All	198308 (7016) 44.4%	33662 (1029) 67.9%	5053 (210) 53.6%	237022 (7407) 46.9%	5555064 (171776) 50.4%	6547017 (209654) 67.0%	5377805 (211073) 43.2%	17479886 (433041) 52.6%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE III - 27**  
**CONTRACT HEALTH CARE PROVIDED OFF-SITE**  
**(NOES 1981-1983)**



**FIGURE III - 28**  
**PLANTS PROVIDING HEALTH CARE BY CONTRACT**  
**(NOES 1981-1983)**



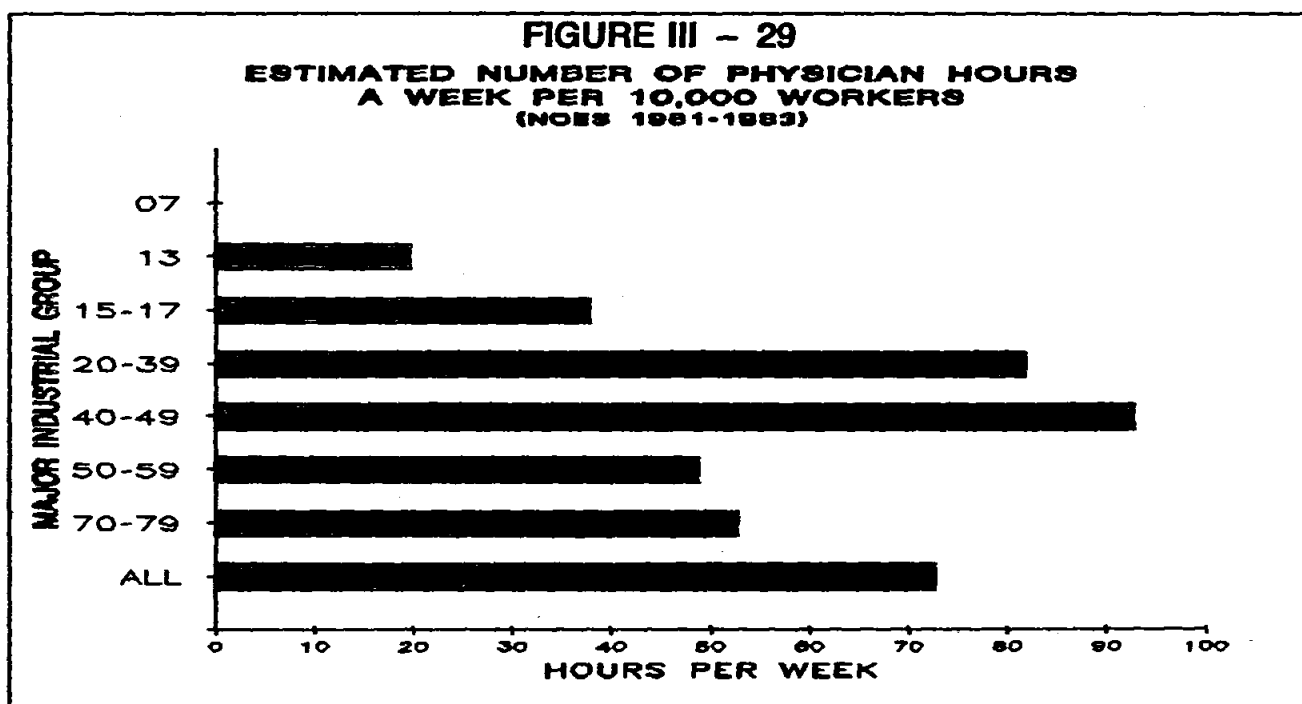
### Estimated Number of Physician Hours Devoted to Industrial Worker Health Care

The intent of this question was to determine the amount of physician time devoted to the health care of industrial workers as a result of management policy.

18. Estimate the average number of physician hours that are devoted to your facility per week.

120

Figure III-30	Estimated number of physician hours a week per 10,000 workers (by 2-digit SIC)
Table III-25	Average number of physician hours a week per 10,000 workers (by major industrial group)
Table III-26	Average number of physician hours a week per 10,000 workers (by 2-digit SIC)



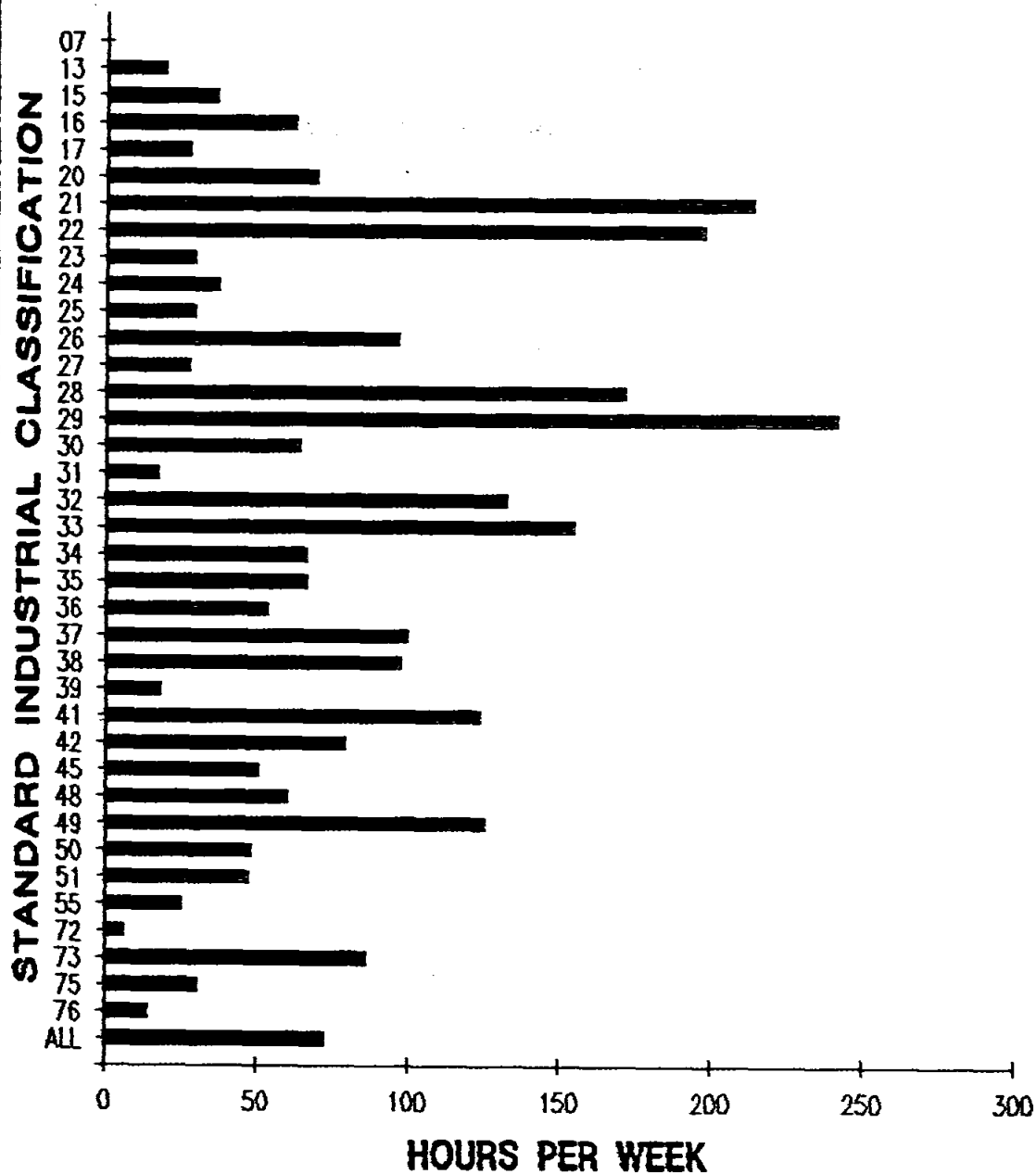
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-25

AVERAGE NUMBER OF PHYSICIAN HOURS A WEEK PER 10,000 WORKERS

MAJOR GROUP	PLANT SIZE			ALL
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	
07	...	...	...	...
13	5* (5)	42* (79)	...	20* (27)
15-17	35 (8)	46* (18)	34* (15)	38 (7)
20-39	50 (11)	64 (9)	115 (15)	82 (9)
40-49	136* (36)	49* (20)	73 (17)	93 (20)
50-59	46 (11)	59* (28)	...	49 (12)
70-79	25* (7)	107* (64)	90* (39)	53* (14)
ALL	53 (6)	59 (8)	109 (12)	73 (6)

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

FIGURE III - 30  
 ESTIMATED NUMBER OF PHYSICIAN HOURS  
 A WEEK PER 10,000 WORKERS  
 (NOES 1981-1983)



## AVERAGE NUMBER OF PHYSICIAN HOURS A WEEK PER 10,000 WORKERS

SIC CODE	PLANT SIZE			ALL
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	
07	...	...	...	...
13	5* (5)	42* (79)	...	20* (27)
15	24* (9)	89* (57)	16* (6)	37* (14)
16	80* (29)	43* (17)	59* (29)	63* (16)
17	30* (8)	22* (13)	...	28* (8)
20	61* (24)	58 (13)	92* (29)	70 (9)
21	305* (915)	...	212* (215)	214* (182)
22	6* (7)	203* (135)	269* (265)	198* (158)
23	17* (9)	14* (5)	102* (103)	30* (13)
24	20* (8)	54* (19)	65* (96)	38* (13)
25	7* (7)	50* (32)	16* (18)	30* (15)
26	62* (17)	43* (19)	195* (170)	97* (46)
27	22* (19)	22* (7)	40* (17)	28* (8)
28	66 (15)	152* (38)	224 (46)	172 (25)
29	18* (22)	220* (126)	332 (81)	242 (53)
30	25* (8)	29* (11)	149* (81)	65* (29)
31	...	21* (19)	21* (10)	18* (14)
32	227* (191)	49* (13)	95* (60)	133* (78)
33	231* (150)	127* (67)	152* (52)	155 (19)



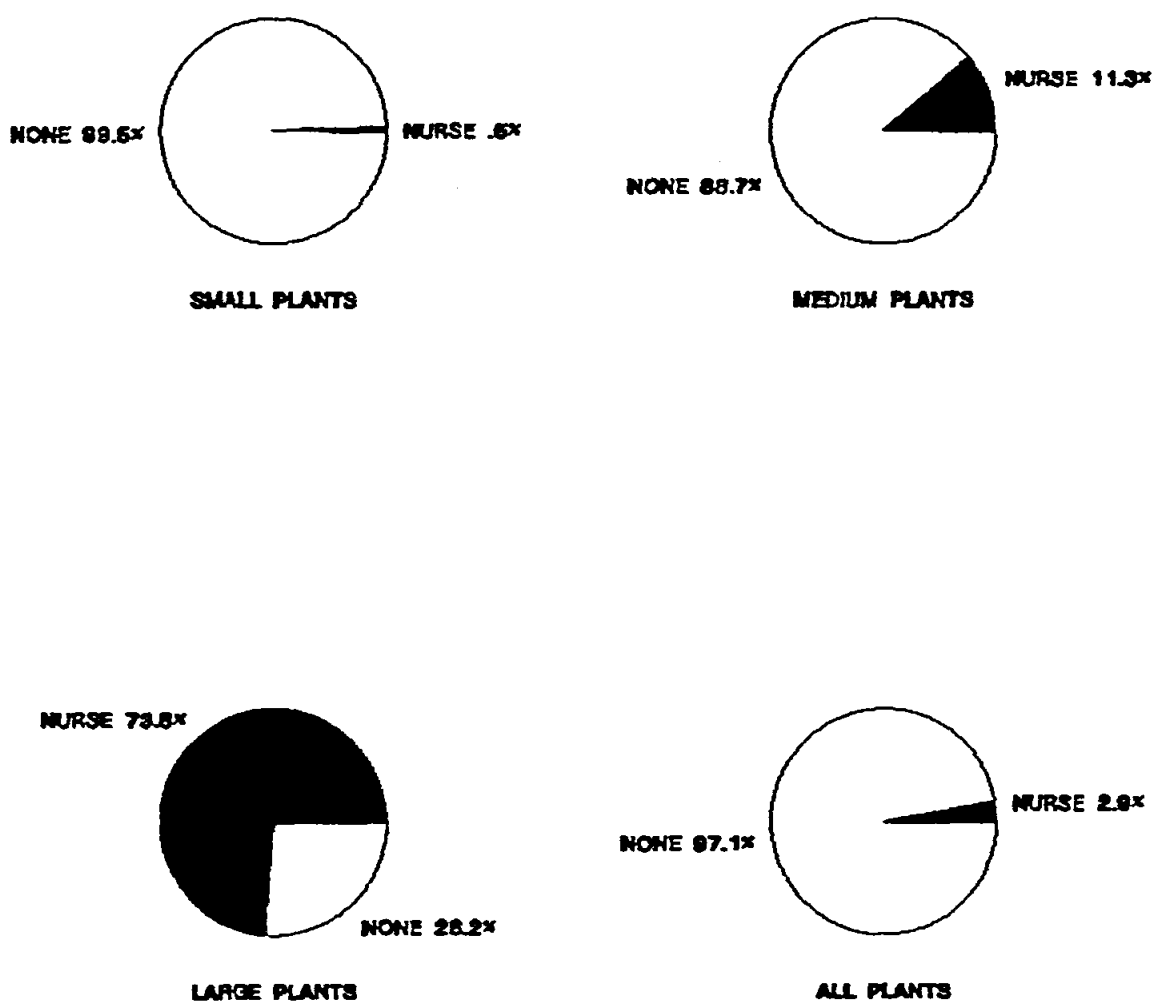
SIC CODE	PLANT SIZE			ALL
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	
34	48* (22)	70 (15)	91* (23)	67 (10)
35	47* (12)	51 (12)	88 (16)	67 (8)
36	20* (7)	36 (6)	69 (12)	54 (8)
37	51* (21)	100* (45)	104 (15)	100 (14)
38	25* (19)	37* (19)	140* (93)	98* (57)
39	10* (5)	30* (11)	20* (59)	19* (12)
41	164* (91)	67* (24)	...	124* (53)
42	115* (39)	22* (6)	57* (29)	80* (26)
45	68* (52)	31* (35)	53* (19)	51* (15)
48	70* (59)	3* (3)	154* (90)	61* (37)
49	304* (173)	28* (33)	84* (43)	126* (63)
50	46 (11)	59* (28)	...	49 (12)
51	55* (22)	...	...	48* (24)
55	35* (19)	...	...	26* (17)
72	8* (6)	4* (4)	...	7* (5)
73	41* (13)	138* (84)	93* (39)	87* (28)
75	32* (19)	...	...	31* (19)
76	11* (11)	45* (37)	...	15* (11)
ALL	54 (6)	60 (8)	109 (12)	73 (6)

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

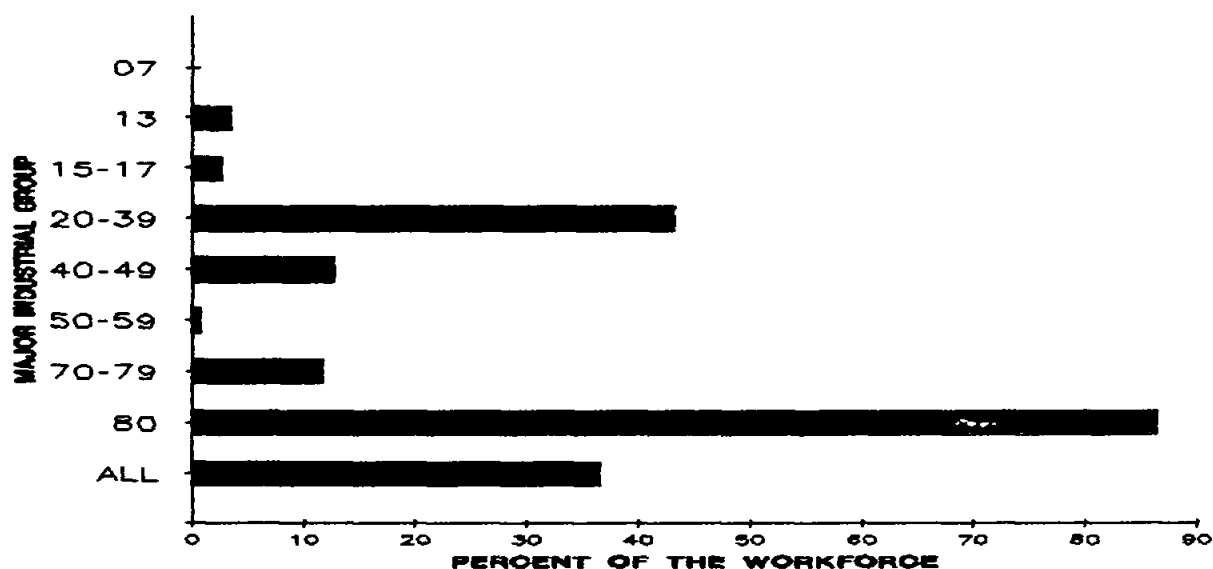


<b>Figure III-33</b>	<b>Nurses employed to provide health care (by 2-digit SIC)</b>
<b>Table III-27</b>	<b>Number and percent of plants and employees in plants which have one or more nurses employed to provide health care (by major industrial group)</b>
<b>Table III-28</b>	<b>Number and percent of plants and employees in plants which have one or more nurses employed to provide health care (by 2-digit SIC).</b>

**FIGURE III - 31**  
**ONE OR MORE NURSES EMPLOYED ON SITE**  
**(NOES 1981-1983)**



**FIGURE III - 32**  
**NURSES EMPLOYED TO PROVIDE HEALTH CARE**  
**(NOES 1981-1983)**



NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-27

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 HAVE ONE OR MORE NURSES EMPLOYED TO PROVIDE HEALTH CARE

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	...	...	...	...	...	...	...	...
13	...	40* (31) 3.9%	...	40* (31) .4%	...	15189* (11898) 8.7%	...	15189* (11898) 3.7%
15-17	...	7* (8) .2%	37* (19) 15.3%	44* (21) .0%	...	2340* (2608) .3%	83146* (26819) 35.2%	85486* (27804) 2.8%
20-39	384* (176) .3%	4109 (630) 12.9%	4712 (243) 75.2%	9205 (797) 4.8%	21080* (8186) .5%	1205197 (175854) 18.9%	7129080 (363355) 86.3%	8355357 (447750) 43.4%
40-49	656* (503) 1.2%	357* (148) 6.1%	169* (81) 36.1%	1181* (504) 2.0%	42127* (34076) 2.9%	97522* (39350) 8.5%	268476 (63619) 46.8%	408125 (81424) 12.9%
50-59	...	43* (27) 1.6%	...	43* (27) .1%	...	13054* (8272) 3.2%	...	13054* (8272) .9%
70-79	395* (482) .5%	138* (76) 5.9%	205* (119) 57.8%	737* (484) 1.0%	10435* (12070) .7%	42342* (22909) 9.1%	207252* (104011) 61.0%	260029* (103040) 11.8%
80	857* (442) 30.2%	968 (186) 44.7%	1845 (289) 89.5%	3670 (538) 51.9%	30882* (13739) 30.4%	287623 (60214) 53.8%	2852000 (348930) 94.4%	3170505 (343119) 86.7%
ALL	2291* (844) .5%	5661 (679) 11.3%	6968 (404) 73.8%	14920 (1190) 2.9%	104525* (39530) .9%	1663268 (191938) 16.9%	10539953 (519003) 84.5%	12307745 (580035) 36.8%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

## NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-28

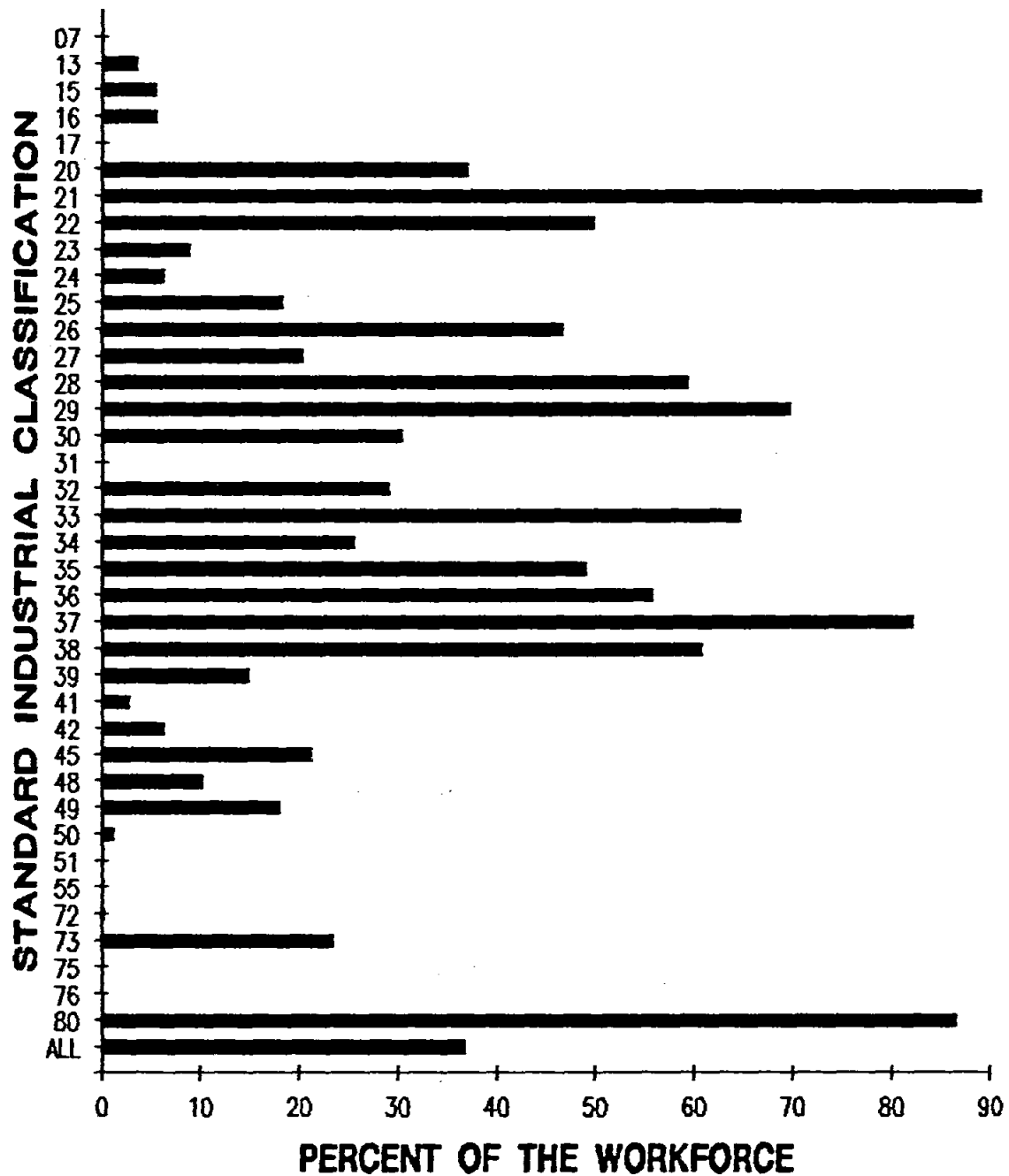
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
HAVE ONE OR MORE NURSES EMPLOYED TO PROVIDE HEALTH CARE

SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	...	...	...	...	...	...	...	...
13	...	40* (31) 3.9%	...	40* (31) .4%	...	15189* (11898) 8.7%	...	15189* (11898) 3.7%
15	...	7* (8) .6%	13* (4) 9.9%	20* (8) .1%	...	2340* (2608) 1.2%	49146* (13445) 36.5%	51486* (13744) 5.7%
16	...	...	24* (19) 22.2%	24* (19) .2%	...	...	33999* (23264) 33.6%	33999* (23264) 5.7%
17	...	...	...	...	...	...	...	...
20	...	523* (148) 16.3%	441 (90) 78.8%	963 (161) 6.3%	...	166682* (55361) 24.7%	411613 (84030) 83.7%	578295 (95347) 37.2%
21	4* (6) 14.6%	...	60* (38) 76.1%	65* (36) 59.2%	258* (345) 13.8%	...	101476* (68062) 90.5%	101734* (67909) 89.2%
22	197* (127) 6.7%	442* (166) 27.8%	255* (65) 85.2%	894* (263) 18.6%	7289* (2928) 6.9%	120154* (39868) 34.6%	229089* (81745) 87.7%	356532 (87295) 49.9%
23	...	23* (26) .7%	115* (68) 47.6%	138* (71) .9%	...	4107* (4712) .7%	108295* (66356) 52.0%	112402* (66246) 9.0%
24	...	9* (8) .8%	19* (8) 18.1%	28* (9) .2%	...	2141* (1963) 1.2%	35767* (18789) 38.7%	37908* (17476) 6.5%
25	...	83* (100) 7.8%	47* (33) 39.9%	131* (96) 2.4%	...	29108* (35753) 11.4%	66155* (34507) 53.8%	95263* (39688) 18.4%
26	...	267* (157) 17.0%	214* (73) 100.0%	482* (190) 8.2%	...	85947* (46580) 30.5%	206864* (65220) 100.0%	292811* (90956) 46.8%
27	...	17* (35) .9%	199* (86) 63.0%	216* (92) 1.1%	...	7023* (14249) 1.9%	235392* (64731) 68.1%	242415* (62408) 20.5%
28	...	336* (131) 28.9%	329 (60) 86.5%	664 (164) 8.6%	...	101537* (33958) 38.9%	443789 (100251) 93.2%	545325 (113925) 59.4%
29	...	141* (49) 48.3%	101* (42) 100.0%	243* (69) 17.3%	...	37477* (12815) 59.2%	117545* (70259) 100.0%	155022* (71575) 69.9%
30	...	34* (34) 2.2%	193* (74) 86.0%	226* (85) 2.7%	...	14201* (14825) 4.8%	216359* (74266) 92.6%	230560* (77464) 30.6%
31	...	...	...	...	...	...	...	...
32	...	134* (94) 13.2%	184* (71) 99.9%	318* (108) 3.2%	...	39782* (25222) 19.0%	128993* (49687) 100.0%	168775* (54732) 29.3%
33	82* (61) 2.0%	382* (113) 26.0%	294* (75) 87.2%	758 (140) 12.8%	5760* (4289) 4.2%	113689* (34811) 36.5%	574511 (97812) 92.4%	693960 (106377) 64.8%

SIC CODE					EMPLOYEES			
	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	23* (23) .1%	465* (135) 14.9%	217* (74) 62.8%	705 (151) 3.2%	2203* (2221) .4%	121082* (34385) 20.3%	262158* (103336) 74.7%	385442* (116367) 25.7%
35	...	538* (139) 15.8%	678 (74) 86.5%	1217 (153) 4.5%	...	156340* (42112) 23.6%	1015309 (129024) 91.2%	1171649 (129804) 49.2%
36	44* (55) .6%	339* (153) 12.6%	544* (137) 69.1%	927* (257) 8.8%	3616* (4555) 1.6%	99218* (39946) 18.0%	998261 (179991) 84.4%	1101096 (195611) 56.0%
37	34* (75) .8%	194* (67) 16.3%	391 (84) 93.9%	618 (136) 11.1%	1954* (4362) 1.5%	51412* (17385) 21.5%	1491527 (233950) 98.5%	1544893 (235823) 82.2%
38	...	54* (36) 5.7%	396* (130) 95.1%	450* (137) 11.1%	...	16839* (12733) 8.7%	445979* (125897) 96.9%	462817* (126498) 60.9%
39	...	127* (252) 15.9%	36* (26) 10.7%	163* (249) 2.1%	...	38461* (80875) 25.7%	39998* (24337) 19.1%	78459* (78326) 15.0%
41	202* (210) 4.6%	...	...	202* (210) 4.1%	5865* (6101) 5.0%	...	...	5865* (6101) 2.9%
42	...	48* (59) 3.2%	24* (21) 28.7%	71* (65) .3%	...	17956* (22209) 6.9%	34467* (35274) 46.1%	52423* (44397) 6.4%
45	...	75* (75) 12.8%	30* (15) 20.3%	105* (82) 2.6%	...	7769* (7769) 7.1%	88689* (45201) 33.6%	96458* (44062) 21.4%
48	...	...	34* (21) 99.0%	34* (21) .2%	...	...	70083* (43687) 100.0%	70083* (43687) 10.4%
49	453* (396) 5.5%	94* (60) 5.0%	82* (89) 47.4%	629* (400) 6.1%	36262* (31700) 13.5%	41313* (26709) 9.7%	75237* (54990) 51.3%	152812* (65137) 18.2%
50	...	43* (27) 2.4%	...	43* (27) .1%	...	13054* (8272) 4.6%	...	13054* (8272) 1.4%
51	...	...	...	...	...	...	...	...
55	...	...	...	...	...	...	...	...
72	15* (24) .1%	...	...	15* (24) .1%	950* (1479) .2%	...	...	950* (1479) .2%
73	379* (484) 2.3%	138* (76) 9.2%	205* (119) 60.0%	722* (485) 3.9%	9486* (12089) 2.3%	42342* (22909) 12.1%	207252* (104011) 63.0%	259080* (103021) 23.6%
75	...	...	...	...	...	...	...	...
76	...	...	...	...	...	...	...	...
80	857* (442) 30.2%	968 (186) 44.7%	1845 (289) 89.5%	3670 (538) 51.9%	30882* (13739) 30.4%	287623 (60214) 53.8%	2852000 (348930) 94.4%	3170505 (343119) 86.7%
All	2291* (752) .5%	5547 (579) 11.2%	6968 (484) 73.9%	14806 (1166) 2.9%	104525* (36519) .9%	1641873 (180285) 16.8%	10539953 (554497) 84.6%	12286350 (586885) 36.9%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE III - 33**  
**NURSES EMPLOYED TO PROVIDE HEALTH CARE**  
**(NOES 1981-1983)**





**NOES QUESTIONNAIRE ITEM NO. 20**  
**Estimated Number of Nurses Employed to Provide**  
**Health Care to Industrial Workers**

**Intent**

The intent of this question was to determine the number of nurses (Registered or Licensed Practical) employed by industrial facilities.

This item was displayed on the questionnaire as:

20. How many registered nurses and licensed practical nurses are on the payroll at this facility?

RN     ---

LPN    ---

**Notes**

The number of nurses accounted for in this question includes only those directly employed by management to provide nursing care to employees. They may or may not be on-site (visiting nurse programs), but must be direct employees whose job function is to provide nursing care to the facility's workers.

Student nurses, visiting or detailed nurses from corporate headquarters, government-employed nurses, or paramedical personnel were not included in the responses to this question. See the Notes section of questionnaire items 14 and 19 for further definitions and qualifications.

Again, as in question 18, no hospital (SIC 80) data is presented here. Many hospital respondents gave their total nurse employment as a response, since no formalized program of health care for employees existed.

**Analysis**

Three analyses of the responses to question 20 are presented.

- (1) Response 20 - Estimated number of Registered Nurses and Licensed Practical Nurses employed by industry

The estimates of the number of Registered and Licensed Practical Nurses employed by industrial facilities to provide nursing care to workers are presented in Tables III-29 and III-30.

Table III-29	Estimated number of Registered and Licensed Practical Nurses employed in industry (by major industrial group)
Table III-30	Estimated number of Registered and Licensed Practical Nurses employed in industry (by 2-digit SIC)

**(2) Response 20 - Estimated number of nurses (RN or LPN) employed per 10,000 workers**

The estimated number of Registered or Licensed Practical Nurses employed per 10,000 workers is displayed in Figures III-34 and III-35, and Tables III-31 and III-32.

<b>Figure III-34</b>	<b>Estimated number of nurses employed per 10,000 workers (by major industrial group)</b>
<b>Figure III-35</b>	<b>Estimated number of nurses employed per 10,000 workers (by 2-digit SIC)</b>
<b>Table III-31</b>	<b>Estimated number of Registered or Licensed Practical Nurses per 10,000 workers (by major industrial group)</b>
<b>Table III-32</b>	<b>Estimated number of Registered or Licensed Practical Nurses per 10,000 workers (by 2-digit SIC)</b>

**(3) Response 20 - Estimated proportions of Registered and Licensed Practical Nurses employed by plant size.**

The estimated proportions of Registered and Licensed Practical Nurses employed to provide nursing care to industrial workers by plant size are displayed in Figure III-36.

<b>Figure III-36</b>	<b>Estimated proportions of Registered and Licensed Practical Nurses employed in industry by plant size - excluding hospitals.</b>
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NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-29

ESTIMATED NUMBER OF REGISTERED AND LICENSED  
PRACTICAL NURSES EMPLOYED IN INDUSTRY

MAJOR GROUP	NUMBER OF REGISTERED NURSES PLANT SIZE				NUMBER OF LICENSED PRACTICAL NURSES PLANT SIZE			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	...	...	...	...	...	...	...	...
13	...	...	...	...	...	40* (31) 5.1%	...	40* (31) 1.8%
15-17	...	...	49* (21) .0%	49* (21) .3%	...	7* (8) .8%	5* (5) .4%	12* (13) .6%
20-39	282* (166) 16.5%	4386 (697) 83.1%	10568 (658) 94.1%	15236 (1060) 83.6%	150* (171) 100.0%	697* (358) 88.6%	1233 (231) 99.4%	2080* (568) 95.5%
40-49	656* (503) 38.3%	720* (439) 13.6%	262* (92) 2.3%	1637* (710) 9.0%	...	...	3* (3) 6.2%	3* (3) 0.1%
50-59	...	20* (19) .0%	...	20* (19) .1%	...	43* (27) 5.5%	...	43* (27) 2.0%
70-79	774* (966) 45.2%	152* (81) .3%	356* (226) 3.1%	1283* (984) 7.0%	...	...	...	...
ALL	1711* (1101) 100.0%	5279 (828) 100.0%	11235 (702) 100.0%	18225 (1611) 100.0%	150* (171) 100.0%	787* (360) 100.0%	1241 (231) 100.0%	2178* (570) 100.0%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
...No facilities observed.

ESTIMATED NUMBER OF REGISTERED AND LICENSED  
PRACTICAL NURSES EMPLOYED IN INDUSTRY

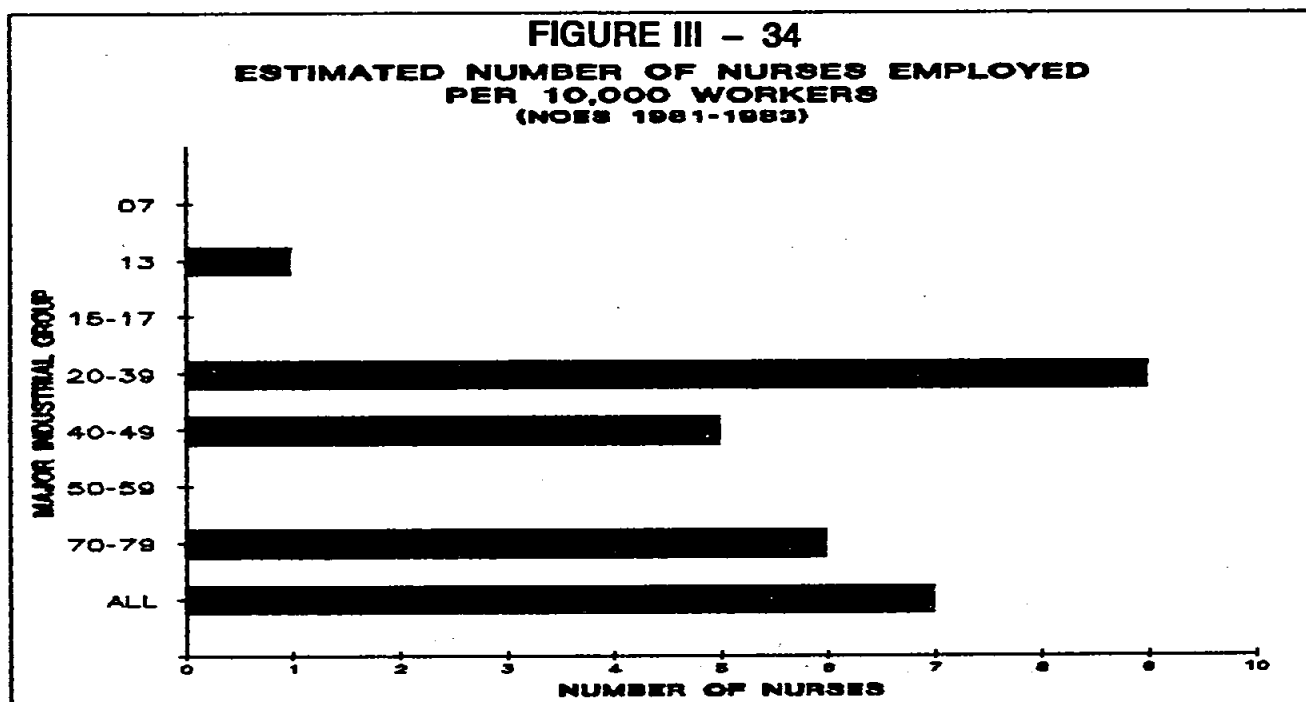
SIC CODE	NUMBER OF REGISTERED NURSES PLANT SIZE				NUMBER OF LICENSED PRACTICAL NURSES PLANT SIZE			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	...	...	...	...	...	...	...	...
13	...	...	...	...	...	40* (31) 5.1%	...	40* (31) 1.8%
15	...	...	25* (9) .2%	25* (9) .1%	...	7* (8) .8%	5* (5) .4%	12* (13) .6%
16	...	...	24* (19) .2%	24* (19) .1%	...	...	...	...
17	...	...	...	...	...	...	...	...
20	...	489* (142) 9.8%	688* (179) 6.1%	1177 (197) 6.6%	...	66* (72) 8.4%	87* (28) 7.0%	153* (75) 7.0%
21	9* (12) .5%	...	264* (206) 2.3%	273* (198) 1.5%	...	...	...	...
22	63* (62) 36.0%	545* (277) 10.9%	477* (293) 4.2%	1085* (540) 6.1%	134* (167) 89.3%	95* (126) 12.1%	60* (50) 4.8%	289* (292) 13.3%
23	...	...	78* (53) .7%	78* (53) .4%	...	23* (26) 2.9%	37* (29) 3.0%	60* (38) 2.8%
24	...	...	104* (58) .9%	104* (58) .6%	...	9* (8) 1.1%	...	9* (8) .4%
25	...	55* (57) 1.1%	88* (59) .8%	143* (78) .8%	...	28* (54) 3.6%	22* (46) 1.7%	51* (66) 2.3%
26	...	410* (252) 8.2%	353* (109) 3.1%	763* (296) 4.3%	...	...	40* (35) 3.2%	40* (35) 1.8%
27	...	17* (35) .3%	281* (91) 2.5%	298* (88) 1.7%	...	...	36* (51) 2.9%	36* (51) 1.7%
28	...	641* (625) 12.9%	1078* (356) 9.6%	1719* (832) 9.6%	...	...	92* (56) 7.4%	92* (56) 4.2%
29	...	176* (68) 3.5%	353* (194) 3.1%	529* (201) 3.0%	...	...	...	...
30	...	34* (34) .7%	340* (129) 3.0%	374* (137) 2.1%	...	...	16* (14) 1.2%	16* (14) .7%
31	...	...	...	...	...	...	...	...
32	...	134* (94) 2.7%	321* (152) 21.8%	455* (165) 2.5%	...	18* (20) 2.3%	...	18* (20) .8%
33	82* (61) 4.8%	349* (131) 7.0%	961* (316) 8.5%	1393 (309) 7.8%	...	158* (126) 20.1%	200* (123) 16.1%	359* (197) 16.5%

## NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983)

## TABLE NO. III-30 (CONTINUED)

SIC CODE	NUMBER OF REGISTERED NURSES PLANT SIZE				NUMBER OF LICENSED PRACTICAL NURSES PLANT SIZE			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	7* (8) .4%	454* (162) 9.1%	454* (152) 4.0%	915 (224) 5.1%	16* (21) 10.6%	80* (45) 10.2%	8* (21) .6%	104* (57) 4.8%
35	...	465* (129) 9.3%	1389 (204) 12.4%	1854 (235) 10.3%	...	106* (61) 13.5%	260* (93) 21.0%	366* (115) 16.8%
36	87* (110) 5.1%	268* (97) 5.4%	1008 (184) 9.0%	1363 (268) 7.6%	...	71* (101) 9.0%	227* (144) 18.3%	298* (197) 13.7%
37	34* (75) 2.0%	164* (62) 3.3%	1463 (233) 13.0%	1662 (269) 9.3%	...	43* (33) 5.5%	100* (79) 8.1%	143* (85) 6.6%
38	...	57* (37) 1.1%	778* (244) 6.9%	836* (246) 4.7%	...	...	19* (28) 1.5%	19* (28) .8%
39	...	127* (252) 2.5%	90* (78) .8%	217* (239) 1.2%	...	...	26* (19) 2.1%	26* (19) 1.2%
41	202* (210) 11.8%	...	...	202* (210) 1.1%	...	...	...	...
42	...	48* (59) 1.0%	28* (35) .2%	75* (74) .4%	...	...	3* (3) .2%	3* (3) .1%
45	...	75* (75) 1.5%	60* (20) .5%	135* (78) .8%	...	...	...	...
48	...	...	92* (57) .8%	92* (57) .5%	...	...	...	...
49	453* (396) 26.5%	94* (60) 1.9%	82* (89) .7%	629* (400) 3.5%	...	...	...	...
50	...	20* (19) .4%	...	20* (19) .1%	...	43* (27) 5.5%	...	43* (27) 2.0%
51	...	...	...	...	...	...	...	...
55	...	...	...	...	...	...	...	...
72	15* (24) .8%	...	...	15* (24) .0%	...	...	...	...
73	759* (967) 44.4%	152* (81) 3.1%	356* (226) 3.2%	1267* (985) 7.1%	...	...	...	...
75	...	...	...	...	...	...	...	...
76	...	...	...	...	...	...	...	...
ALL	1711* (911) 100.0%	4983 (676) 100.0%	11235 (685) 100.0%	17929 (1658) 100.0%	150* (171) 100.0%	787* (352) 100.0%	1241 (229) 100.0%	2178* (560) 100.0%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.



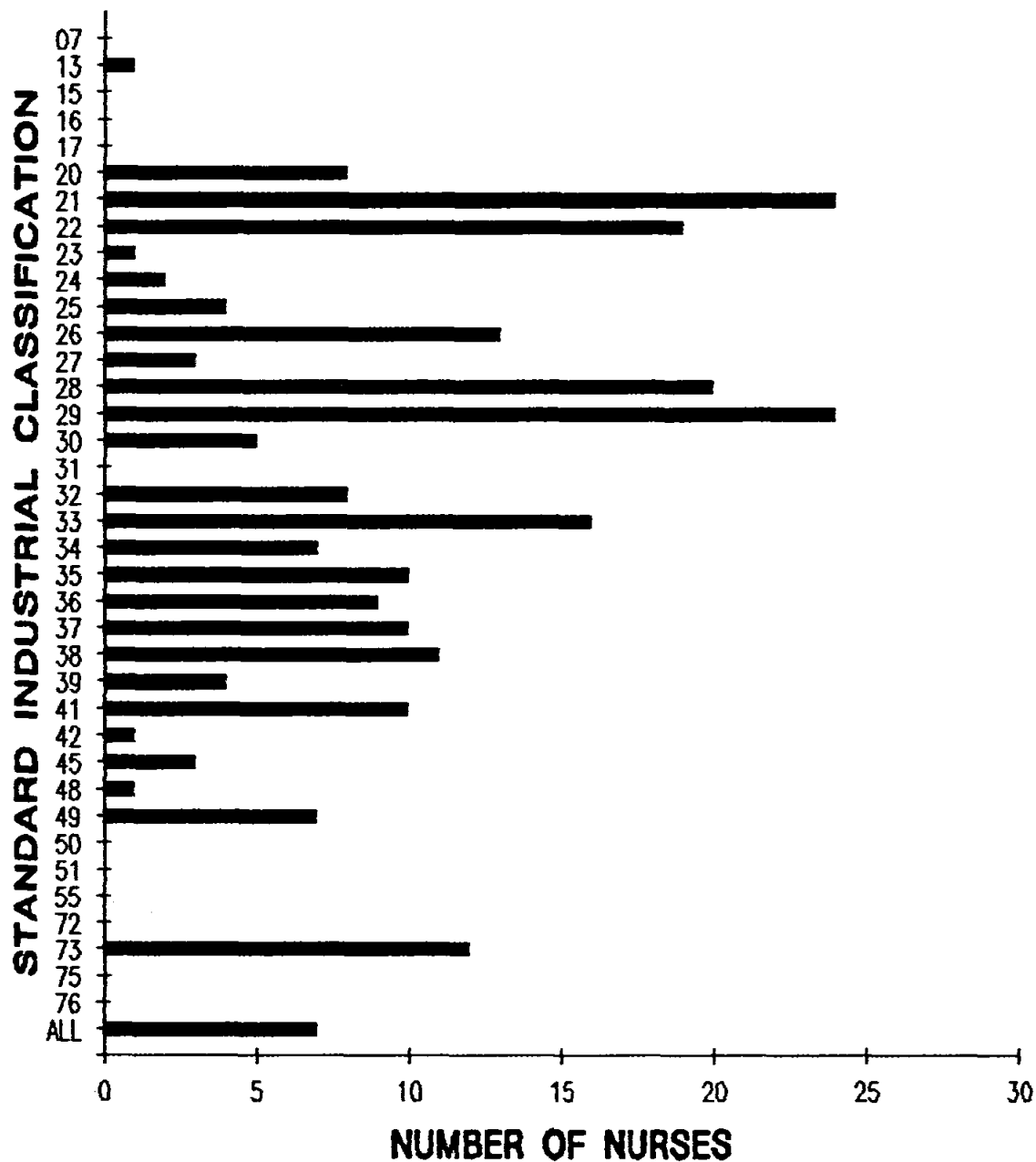
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-31

## ESTIMATED NUMBER OF REGISTERED OR LICENSED PRACTICAL NURSES PER 10,000 WORKERS

MAJOR GROUP	NUMBER OF RN's PER 10,000 WORKERS				NUMBER OF LPN's PER 10,000 WORKERS			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	ALL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	ALL
07	...	...	...	...	...	...	...	...
13	...	...	...	...	...	2* (2)	...	1* (1)
15-17	...	...	2* (1)	<1	...	<1	<1	<1
20-39	1* (≥.25)	7 (1)	13 (1)	8 ( $<.5$ )	<1	1* (1)	1 ( $<.25$ )	1* (≥.25)
40-49	5* (4)	6* (5)	5* (1)	5* (2)	...	...	<1	<1
50-59	...	<1	...	<1	...	1* (1)	...	<1
70-79	6* (7)	3* (2)	10* (4)	6* (4)	...	...	...	...
ALL	2* (1)	5 (1)	12 (1)	6 (1)	<1	1* (≥.25)	1 ( $<.25$ )	1* (≥.25)

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE III - 35**  
**ESTIMATED NUMBER OF NURSES EMPLOYED**  
**PER 10,000 WORKERS**  
**(NOES 1981-1983)**



## ESTIMATED NUMBER OF REGISTERED OR LICENSED PRACTICAL NURSES PER 10,000 WORKERS

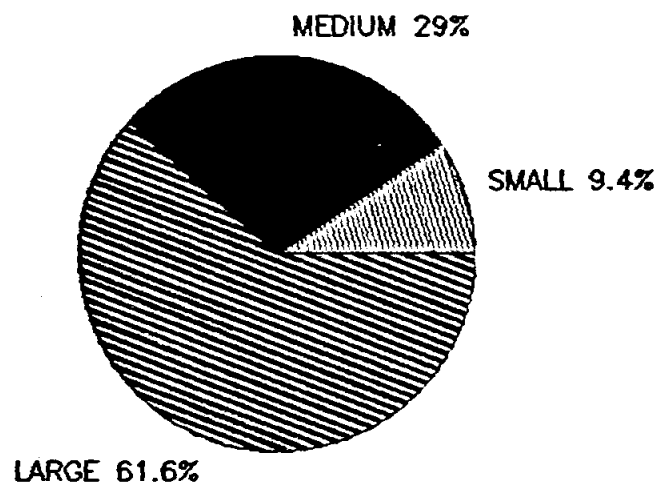
SIC CODE	NUMBER OF RN's PER 10,000 WORKERS PLANT SIZE				NUMBER OF LPN's PER 10,000 WORKERS PLANT SIZE			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	ALL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	ALL
07	...	...	...	...	...	...	...	...
13	...	...	...	...	...	2* (2)	...	1* (1)
15	...	...	2* (1)	<1	...	<1	<1	<1
16	...	...	2* (2)	<1	...	...	...	...
17	...	...	...	...	...	...	...	...
20	...	7 (2)	14 (2)	8 (1)	...	1* (1)	2* (1)	1* (.25)
21	47* (141)	...	24* (27)	24* (23)	...	...	...	...
22	6* (6)	16* (8)	18* (10)	15* (7)	13* (16)	3* (4)	2* (1)	4* (4)
23	...	...	4* (2)	1* (≥.25)	...	<1	2* (2)	<1
24	...	...	11* (13)	2* (1)	...	1* (≥.25)	...	<1
25	...	2* (2)	7* (7)	3* (2)	...	1* (2)	2* (3)	1* (1)
26	...	15* (7)	17 (2)	12* (4)	...	...	2* (1)	1* (1)
27	...	<1	8 (2)	3 (1)	...	...	1* (1)	<1
28	...	25* (24)	23 (4)	19* (7)	...	...	2* (1)	1* (1)
29	...	28* (10)	30 (6)	24 (4)	...	...	...	...
30	...	1* (1)	15 (3)	5* (1)	...	...	1* (1)	<1*
31	...	...	...	...	...	...	...	...
32	...	6* (4)	25* (7)	8* (2)	...	1* (1)	...	<1
33	6* (4)	11* (4)	15* (4)	13 (3)	...	5* (4)	3* (2)	3* (2)



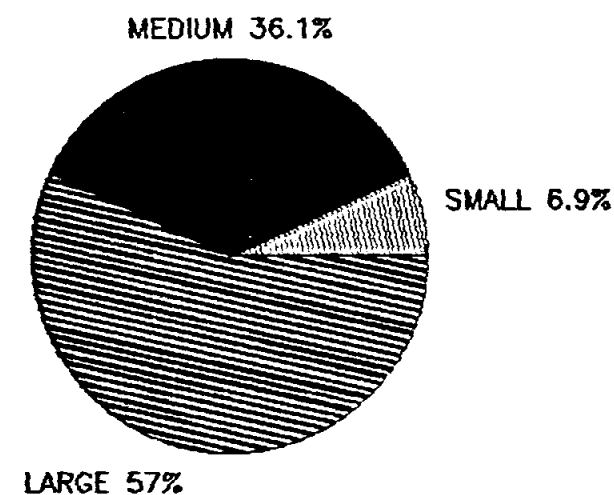
SIC CODE	NUMBER OF RN's PER 10,000 WORKERS PLANT SIZE				NUMBER OF LPN's PER 10,000 WORKERS PLANT SIZE			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	ALL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	ALL
34	<1	8* (3)	13 (2)	6 (1)	<1	1* (1)	<1 ...	1* (≥.25)
35	...	7* (2)	12 (1)	8 (1)	...	2* (1)	2* (1)	2* (1)
36	4* (5)	5* (2)	9 (1)	7 (1)	...	1* (2)	2* (1)	2* (1)
37	3* (6)	7* (3)	10 (1)	9 (1)	...	2* (1)	1* (1)	1* (≥.25)
38	...	3* (2)	17 (2)	11 (2)	...	...	<1	<1
39	...	8* (4)	4* (15)	4* (3)	...	...	1* (4)	<1
41	17* (20)	...	...	10* (11)	...	...	...	...
42	...	2* (2)	4* (2)	1* (1)	...	...	<1	<1
45	...	7* (7)	2* (1)	3* (2)	...	...	...	...
48	...	...	13* (6)	1* (1)	...	...	...	...
49	17* (14)	2* (3)	6* (5)	7* (5)	...	...	...	...
50	...	<1	...	<1	...	1* (1)	...	<1
51	...	...	...	...	...	...	...	...
55	...	...	...	...	...	...	...	...
72	<1	...	...	<1	...	...	...	...
73	18* (21)	4* (2)	11* (4)	12* (9)	...	...	...	...
75	...	...	...	...	...	...	...	...
76	...	...	...	...	...	...	...	...
ALL	2* (1)	5 (1)	12 (1)	6 (1)	<1	1* (≥.25)	1 (<.25)	1* (≥.25)

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE III - 36**  
**ESTIMATED PROPORTION OF R.N.s and L.P.N.s EMPLOYED**  
**IN INDUSTRY BY PLANT SIZE - EXCLUDING HOSPITALS**  
**(NOES 1981-1983)**



**REGISTERED NURSES**



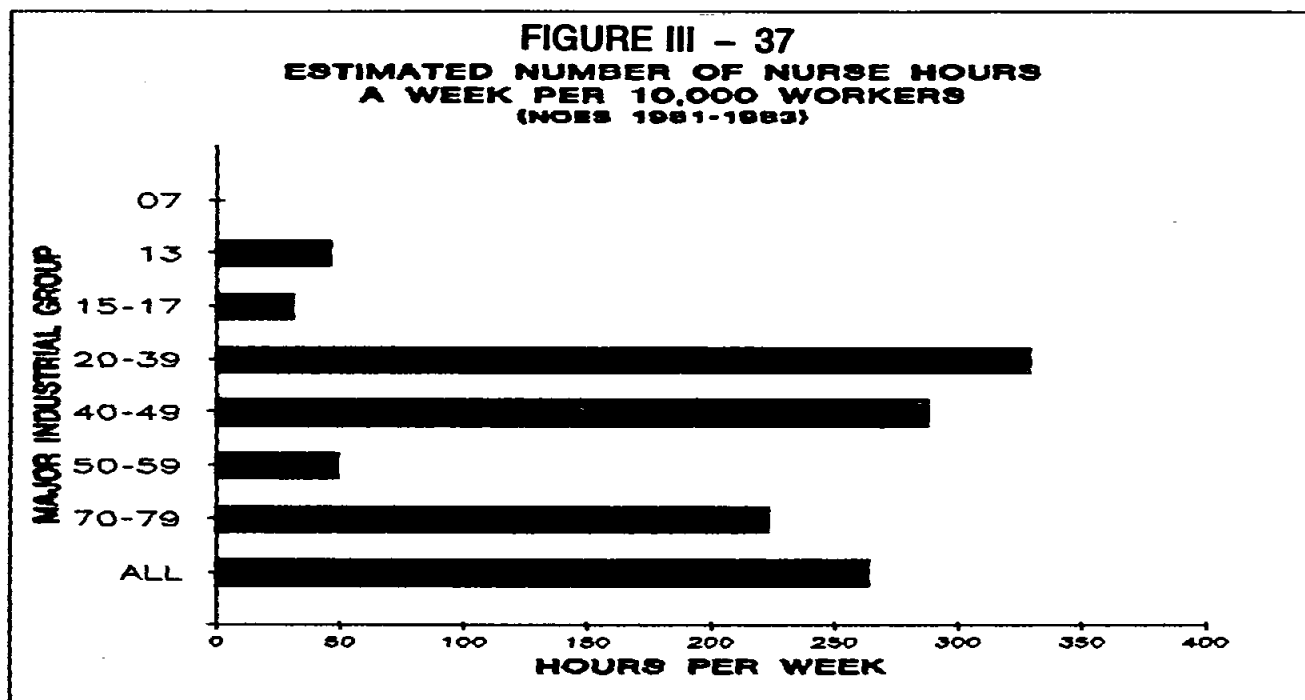
**LICENSED PRACTICAL NURSES**

### Intent

**This item was displayed on the questionnaire as:**

hours

## 143



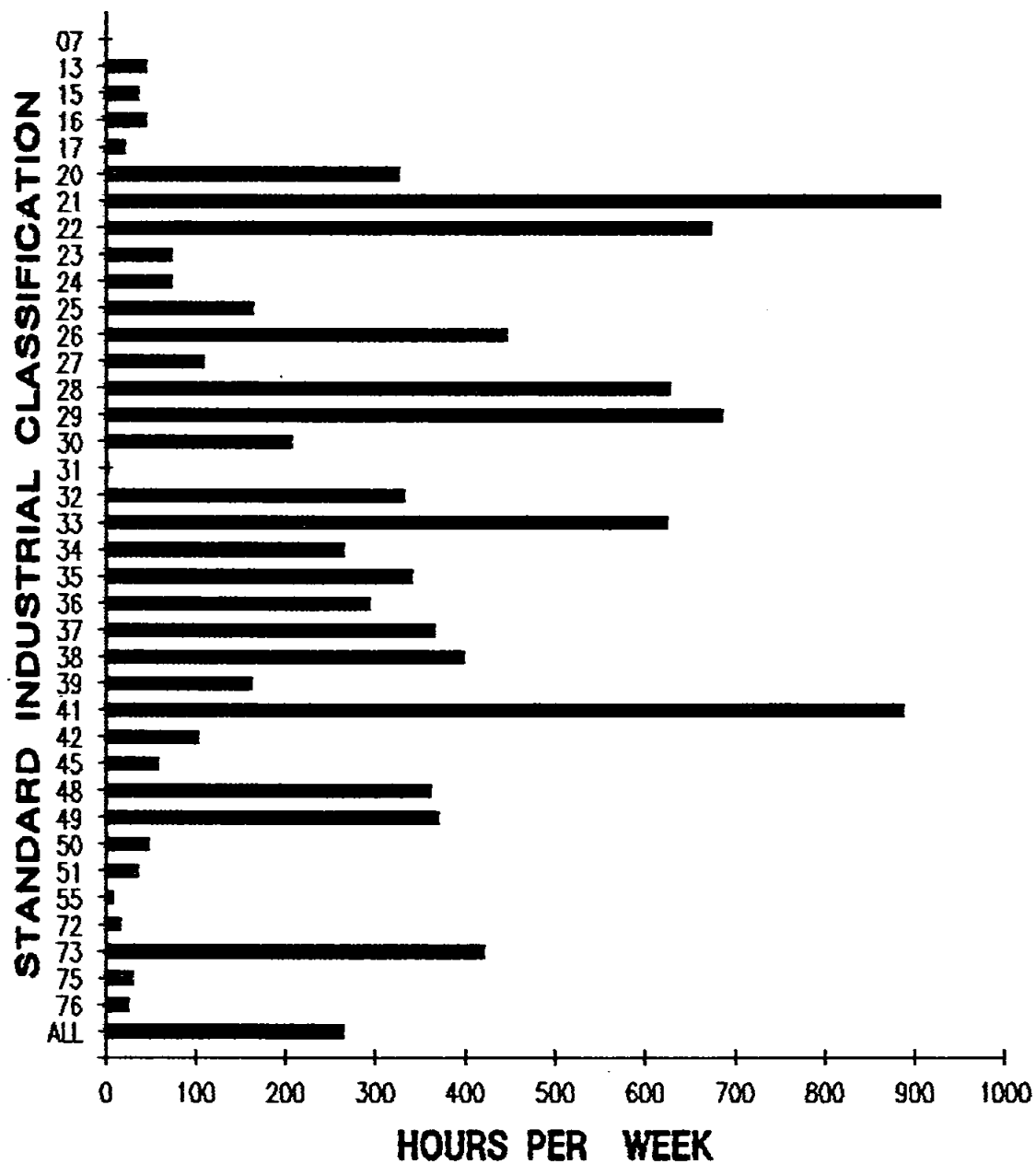
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-33

## ESTIMATED AVERAGE NUMBER OF NURSE HOURS A WEEK PER FACILITY AND PER 10,000 WORKERS

MAJOR GROUP	ESTIMATED NURSE HOURS PER FACILITY				ESTIMATED NURSE HOURS PER 10,000 WORKERS			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	ALL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	ALL
07	...	...	...	...	...	...	...	...
13	<1	2* (1)	...	<1	16* (24)	94* (75)	...	47* (24)
15-17	...	<1	12* (7)	...	24 (5)	24* (7)	123* (54)	32 (5)
20-39	<1	6 (1)	69 (4)	3 ( $<.5$ )	51* (15)	284 (36)	523 (23)	330 (18)
40-49	1* (1)	2* (1)	20 (4)	2* (1)	471* (244)	123* (62)	164* (47)	289* (104)
50-59	<1	2* (1)	...	<1	29* (7)	109* (55)	...	50* (13)
70-79	<1	2* (1)	31* (11)	1* (1)	242* (271)	100* (42)	321* (126)	224* (173)
ALL	<1	4 (1)	61 (3)	2 ( $<.5$ )	121* (43)	217 (28)	482 (19)	265 (23)

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE III - 38**  
**ESTIMATED NUMBER OF NURSE HOURS**  
**A WEEK PER 10,000 WORKERS**  
 (NCHS 1981-1983)



## ESTIMATED AVERAGE NUMBER OF NURSE HOURS A WEEK PER FACILITY AND PER 10,000 WORKERS

SIC CODE	ESTIMATED NURSE HOURS PER FACILITY PLANT SIZE				ESTIMATED NURSE HOURS PER 10,000 WORKERS PLANT SIZE			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	ALL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	ALL
07	...	...	...	...	...	...	...	...
13	<1	2* (1)	...	<1	16* (24)	94* (75)	...	47* (24)
15	<1	<1	11* (14)	...	24* (9)	22* (9)	115* (62)	37 (8)
16	<1	1* (≥.25)	13* (9)	<1	24* (9)	35* (13)	133* (80)	46* (14)
17	<1	<1	...	<1	24* (7)	18* (12)	...	23* (7)
20	<1	7 (2)	49 (10)	3 (.5)	30* (10)	336 (72)	552 (114)	328 (43)
21	12* (33)	...	130* (166)	97* (108)	1875* (5632)	...	914* (990)	930* (872)
22	2* (2)	14* (6)	63* (22)	10* (3)	605* (519)	660* (283)	725* (271)	676* (245)
23	<1	1* (≥.25)	27* (13)	1* (≥.25)	15* (9)	35* (20)	313* (103)	75* (25)
24	<1	1* (≥.25)	29* (104)	<1	4* (2)	64* (24)	328* (380)	75* (27)
25	<1	4* (4)	37* (140)	2* (1)	2* (4)	160* (161)	358* (304)	165* (82)
26	<1	9* (5)	65 (14)	5* (2)	42* (18)	478* (293)	675 (75)	448* (144)
27	<1	1* (1)	34 (8)	1* (≥.25)	6* (6)	62* (57)	307* (97)	111* (40)
28	<1	12* (3)	112 (28)	7* (2)	49* (14)	546 (131)	897 (142)	630 (101)
29	...	15* (10)	107* (36)	11* (5)	...	702* (367)	918* (299)	687* (181)
30	<1	1* (1)	60 (15)	2* (1)	23* (8)	61* (50)	572 (119)	208* (62)
31	...	<1	<1	<1	...	2* (2)	7* (11)	2* (1)
32	<1	5* (3)	76* (30)	2* (1)	24* (11)	225* (100)	1082* (333)	334* (108)
33	1* (1)	14* (4)	121 (22)	11 (2)	422* (207)	652* (199)	658 (156)	626 (84)

SIC CODE	ESTIMATED NURSE HOURS PER FACILITY PLANT SIZE				ESTIMATED NURSE HOURS PER 10,000 WORKERS PLANT SIZE			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	ALL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	ALL
34	<1	7* (2)	51 (12)	2 ( $<.5$ )	28* (10)	350* (89)	502 (77)	267 (45)
35	...	6 (1)	78 (9)	3 ( $<.5$ )	33 (8)	288 (65)	546 (67)	343 (36)
36	<1	5* (2)	56 (5)	5 (1)	22* (9)	244* (103)	372 (32)	295 (38)
37	<1	6* (2)	142 (16)	12* (4)	148* (232)	304* (82)	398 (42)	368 (39)
38	...	2* (1)	68 (14)	7* (2)	...	101* (58)	617 (124)	400 (88)
39	<1	6* (3)	11* (86)	1* (1)	13* (9)	311* (131)	179* (520)	164* (90)
41	4* (4)	...	...	4* (4)	1505* (1556)	...	...	889* (870)
42	<1	1* (2)	17* (11)	<1	104* (39)	85* (81)	185* (99)	105* (34)
45	<1	1* (1)	14* (7)	1* (≥.25)	6* (8)	52* (39)	80* (26)	60* (17)
48	1* (1)	...	89* (69)	2* (1)	504* (537)	...	428* (224)	364* (348)
49	3* (2)	3* (3)	16* (11)	3* (2)	854* (705)	131* (143)	187* (160)	372* (234)
50	<1	2* (1)	...	<1	29* (7)	109* (55)	...	50* (13)
51	<1	...	...	...	43* (14)	...	...	37* (15)
55	<1	...	...	<1	12* (11)	...	...	9* (9)
72	<1	...	...	<1	24* (22)	...	...	19* (19)
73	2* (2)	3* (1)	32* (11)	3* (2)	743* (848)	121* (58)	332* (130)	423* (340)
75	<1	1* (1)	...	<1	31* (18)	71* (51)	...	32* (18)
76	<1	3* (4)	...	<1	11* (11)	149* (124)	...	28* (20)
ALL	<1	4 (1)	62 (3)	2 ( $<.5$ )	122* (43)	219 (28)	483 (19)	267 (23)

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**NOES QUESTIONNAIRE ITEM NO. 22**  
**Examination or Tests Provided By Industrial Facilities**

**Intent**

The intent of this question was to determine whether there was a company policy to provide preventive medical program services (examinations and tests), and to define which workers received these services on a periodic basis.

This overall item was displayed on the questionnaire as:

22. Do you provide the following examinations or tests to all or to selected groups of employees on a periodic basis?

	No	Yes, All	Yes, All Exec. & Mgmt Only	Yes, All Production Workers Only	Yes, for Selected Mgmt and/or Production Workers
Opthalmology	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
Audiometric	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
Blood tests	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
Urine tests	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
Pulmonary function	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
Chest X-rays	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
Allergy/Sensitization	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
Immunizations (flu, etc.)	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>

**Notes**

Each of the five possible answers within each of the eight tests categorized here is separately defined.

- (1) A "no" response indicated that no tests were provided to any worker in the facility.
- (2) A "yes, all" response indicated that an employer provided the specific test or examination to every employee in the facility without regard to that employee's exposure to potential occupational safety and health hazards.
- (3) A "yes, all exec. and mgmt. only" response indicated that examinations or tests were provided only to managerial or executive employees.





Table III-35	Number and percent of plants and employees in plants which provide one or more screening tests to all workers (by major industrial group)
Table III-36	Number and percent of plants and employees in plants which provide one or more screening tests to all employees (by 2-digit SIC)

**(2) Response 22.3 - Provision of screening tests to management personnel**

The estimates of the plants which provide at least one of the eight screening tests or procedures to management only, and the workers in those plants (by number and proportion of the totals) are displayed in Figures III-41 and III-42, and Tables III-37 and III-38.

Figure III-41	One or more tests provided only to management (by major industrial group)
Figure III-42	One or more tests provided only to management (by 2-digit SIC)
Table III-37	Number and percent of plants and employees in plants which provide one or more screening tests to management only (by major industrial group)
Table III-38	Number and percent of plants and employees in plants which provide one or more screening tests to management only (by 2-digit SIC)

**(3) Response 22.4 - Provision of screening tests to production workers only**

The estimates of the plants which provide one or more screening tests or procedures to all production workers only, and the workers in those plants (by number and proportion of the totals) are displayed in Figures III-43 and III-44, and Tables III-39 and III-40.

Figure III-43	One or more tests provided to all production workers (by major industrial group)
Figure III-44	One or more tests provided to all production workers (by 2-digit SIC)
Table III-39	Number and percent of plants and employees in plants which provide one or more screening tests to all production workers (by major industrial group)
Table III-40	Number and percent of plants and employees in plants which provide one or more screening tests to production workers (by 2-digit SIC)

**(4) Response 22.5 - Provision of screening tests to selected employees**

The estimates of the plants which provide at least one of the eight tests or procedures to selected employees only, and the workers in those plants (by number and proportion of the totals) are displayed in Figures III-45 and III-46, and Tables III-41 and III-42.

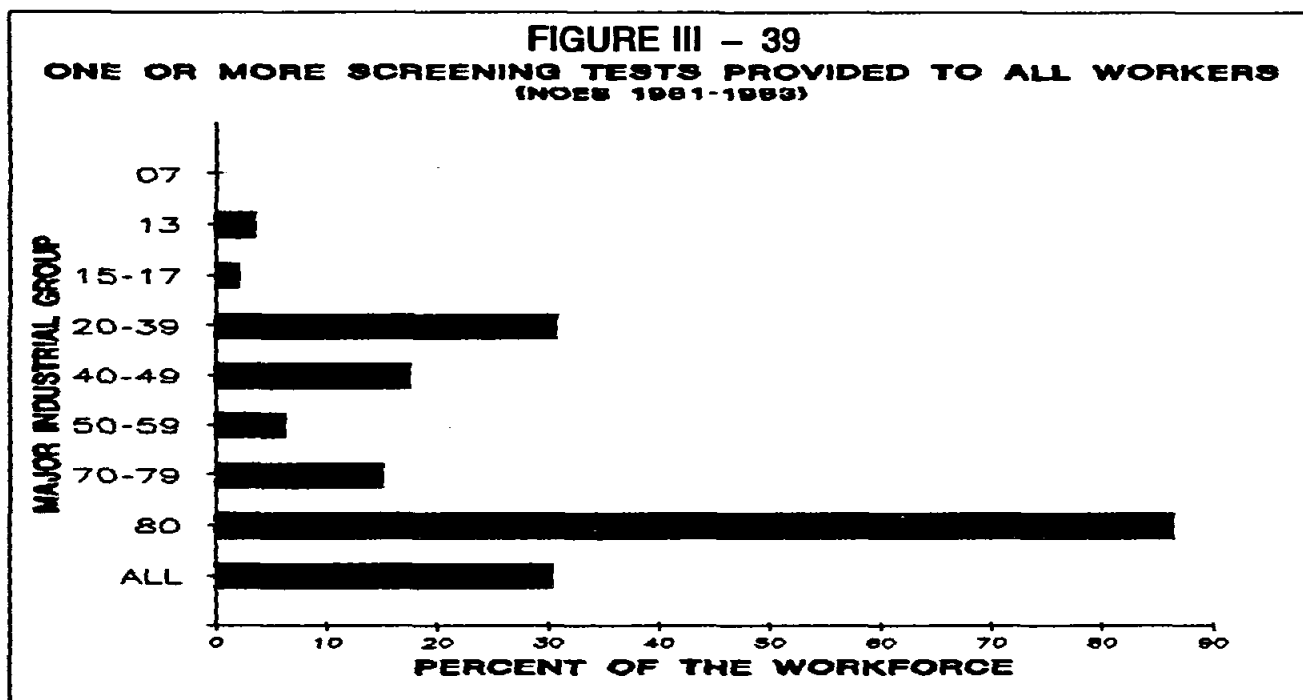
Figure III-45	One or more tests provided to selected workers (by major industrial group)
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<b>Figure III-46</b>	<b>One or more tests provided to selected workers (by 2-digit SIC)</b>
<b>Table III-41</b>	<b>Number and percent of plants and employees in plants which provide one or more screening tests to selected workers (by major industrial group)</b>
<b>Table III-42</b>	<b>Number and percent of plants and employees in plants which provide one or more screening tests to selected employees (by 2-digit SIC)</b>

- (5) Response 22.2, 22.3, 22.4, or 22.5 - Provision of screening tests to at least some employees**

The estimates of the plants which provide one or more of the eight screening tests or procedures to at least some employees (production or management), and the workers in those plants (by number and proportion of the totals) are displayed in Figures III-47, III-48, III-49, and III-50, and Tables III-43 and III-44.

<b>Figure III-47</b>	<b>Screening tests provided to some workers (by major industrial group)</b>
<b>Figure III-48</b>	<b>Screening tests provided to some workers (by 2-digit SIC)</b>
<b>Figure III-49</b>	<b>Plants providing some screening tests</b>
<b>Figure III-50</b>	<b>Workers in plants providing some tests</b>
<b>Table III-43</b>	<b>Number and percent of plants and employees in plants which provide screening tests to at least some workers (by major industrial group)</b>
<b>Table III-44</b>	<b>Number and percent of plants and employees in plants which provide screening tests to at least some employees (by 2-digit SIC)</b>



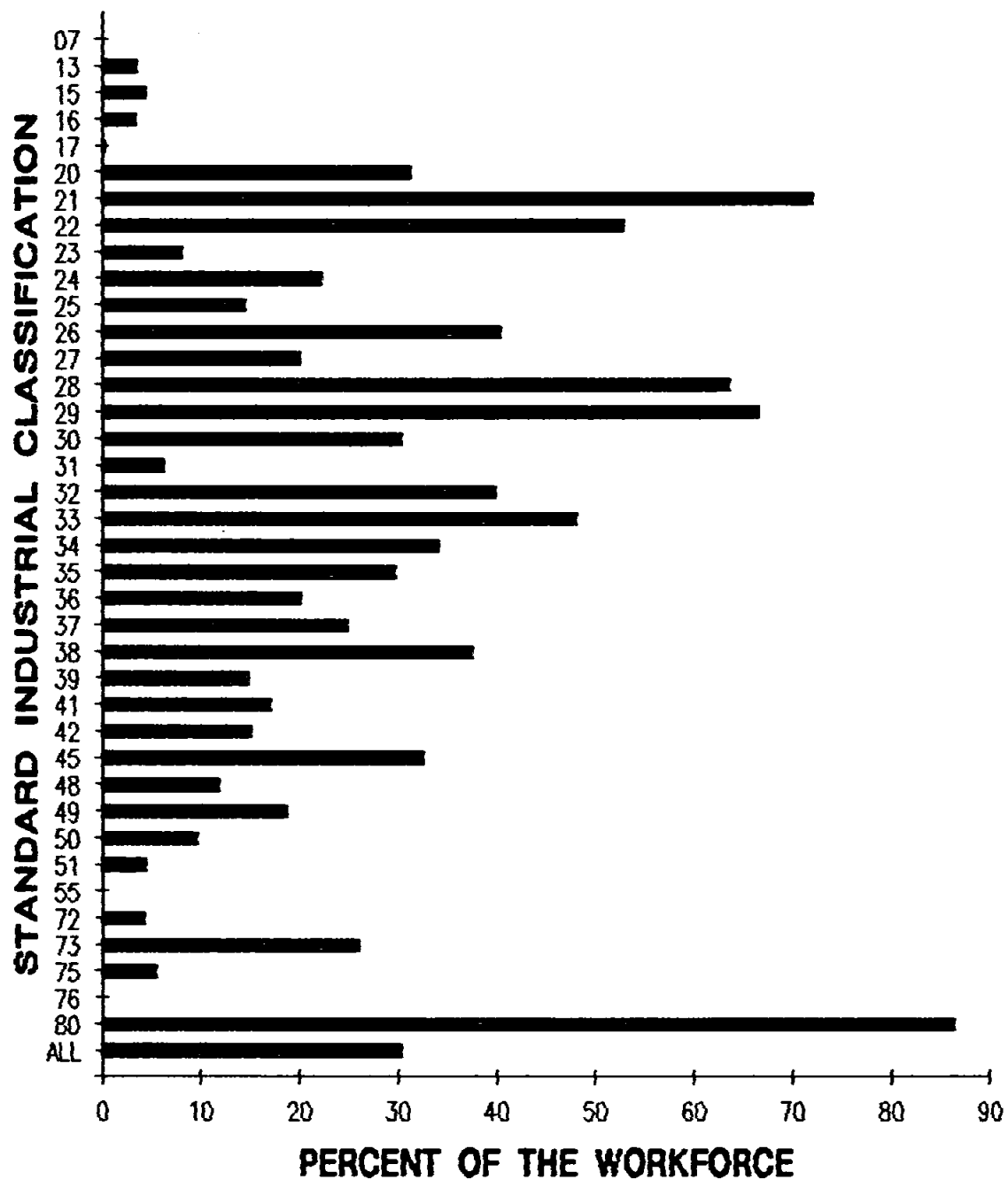
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-35

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
PROVIDE ONE OR MORE SCREENING TESTS TO ALL WORKERS

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	...	...	...	...	...	...	...	...
13	340* (233) 4.0%	32* (29) 3.1%	...	372* (242) 3.9%	8278* (5028) 4.0%	7071* (6377) 4.1%	...	15349* (10207) 3.7%
15-17	883* (455) .9%	95* (68) 2.3%	23* (33) 9.6%	1001* (464) 1.0%	14773* (7111) .7%	27262* (22705) 3.7%	25913* (26710) 11.0%	67948* (34032) 2.2%
20-39	11540 (1531) 7.5%	8629 (826) 27.2%	2944 (264) 47.0%	23114 (1861) 12.1%	471274 (59599) 10.2%	1845736 (186348) 28.9%	3626216 (342316) 43.9%	5943225 (416954) 30.9%
40-49	7606 (1457) 14.3%	1137* (417) 19.5%	117* (78) 25.0%	8861 (1586) 14.9%	217306 (46666) 15.2%	225361* (78393) 19.5%	117366* (59877) 20.5%	560034 (114950) 17.7%
50-59	1657* (803) 2.8%	167* (125) 6.3%	...	1823* (813) 3.0%	49373* (24377) 4.4%	50155* (37774) 12.3%	...	99527* (44843) 6.5%
70-79	4170* (1063) 5.7%	313* (126) 13.4%	142* (110) 40.0%	4625 (1036) 6.1%	100689* (30912) 7.2%	74086* (27884) 15.9%	159140* (89066) 46.9%	333914* (95636) 15.2%
80	1845* (627) 65.0%	1621 (254) 74.8%	1875 (297) 91.0%	5340 (759) 75.6%	68710 (15092) 67.6%	407857 (76271) 76.3%	2690542 (326370) 89.0%	3167109 (320514) 86.6%
ALL	28041 (2626) 6.2%	11994 (979) 24.0%	5101 (421) 54.0%	45136 (2927) 8.9%	930404 (87081) 8.4%	2637527 (222372) 26.7%	6619177 (485726) 53.1%	10187107 (549739) 30.5%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
...No facilities observed.

**FIGURE III - 40**  
**ONE OR MORE SCREENING TESTS PROVIDED TO ALL WORKERS**  
 (NOES 1981-1983)

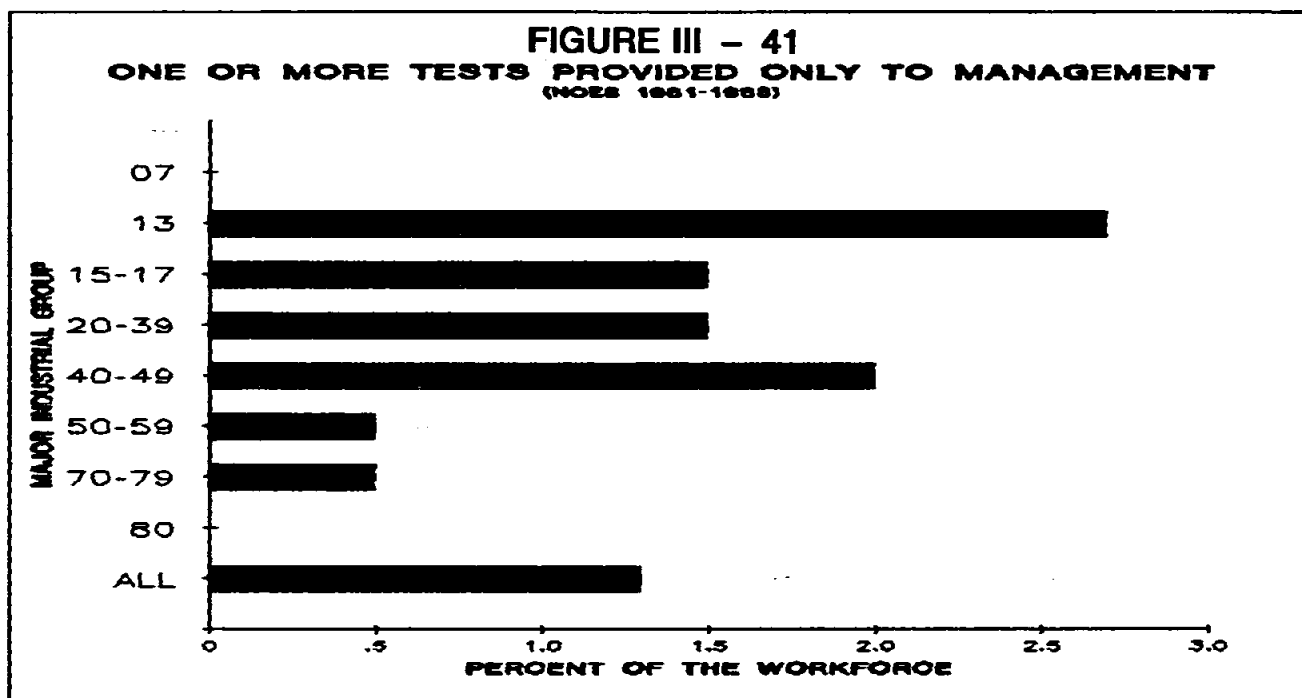


NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
PROVIDE ONE OR MORE SCREENING TESTS TO ALL EMPLOYEES

SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	...	...	...	...	...	...	...	...
13	340* (233) 4.0%	32* (29) 3.1%	...	372* (242) 3.9%	8278* (5028) 4.0%	7071* (6377) 4.1%	...	15349* (10207) 3.7%
15	331* (330) 1.3%	56* (57) 5.0%	5* (6) 3.7%	392* (335) 1.5%	2982* (2967) .5%	21769* (22236) 11.0%	16222* (20062) 12.0%	40972* (32230) 4.6%
16	399* (335) 3.5%	39* (39) 3.5%	18* (32) 17.1%	457* (342) 3.7%	6178* (4725) 2.2%	5493* (5493) 2.6%	9691* (16956) 9.6%	21362* (16900) 3.6%
17	152* (151) .3%	...	...	152* (151) .3%	5614* (5360) .4%	...	...	5614* (5360) .4%
20	742* (325) 6.5%	935 (231) 29.1%	315* (92) 56.4%	1992 (415) 13.1%	30248* (11410) 7.8%	222186* (60067) 33.0%	237152* (68410) 48.2%	489586 (90101) 31.5%
21	4* (6) 14.6%	...	46* (37) 58.6%	51* (37) 46.5%	258* (345) 13.8%	...	82069* (68223) 73.2%	82327* (68177) 72.2%
22	319* (159) 10.9%	612 (146) 38.5%	251* (73) 84.1%	1182 (219) 24.5%	16511* (7703) 15.6%	174513 (40854) 50.3%	188060* (75183) 72.0%	379084 (87281) 53.1%
23	202* (143) 1.6%	174* (86) 5.6%	47* (41) 19.4%	423* (167) 2.7%	13531* (10371) 3.2%	42618* (20788) 7.0%	47062* (40984) 22.6%	103212* (47584) 8.3%
24	1005* (407) 9.4%	376* (206) 32.7%	19* (8) 18.1%	1400* (424) 11.7%	43525* (17530) 14.3%	51199* (31498) 27.9%	35767* (18789) 38.7%	130490* (37018) 22.5%
25	25* (63) .6%	111* (96) 10.5%	19* (15) 15.9%	155* (142) 2.9%	2267* (5671) 1.6%	35780* (30662) 14.0%	38134* (22387) 31.0%	76182* (42902) 14.7%
26	387* (177) 9.4%	660* (276) 42.1%	111* (79) 51.7%	1157* (342) 19.6%	31591* (14288) 22.9%	108145* (45436) 38.4%	114311* (67190) 55.3%	254048* (91907) 40.6%
27	1092* (338) 6.0%	368* (158) 19.7%	108* (61) 34.2%	1569* (410) 7.7%	40254* (13670) 8.4%	83877* (37816) 23.2%	114837* (58109) 33.2%	238968* (75369) 20.2%
28	1382* (425) 22.4%	637 (142) 54.9%	282* (83) 74.1%	2301 (530) 29.8%	55174* (15893) 30.5%	140442 (30642) 53.8%	390150* (100828) 81.9%	585766 (116462) 63.8%
29	...	264* (124) 90.1%	73* (35) 72.2%	337* (139) 24.0%	...	60212* (21521) 95.2%	87901* (45186) 74.8%	148114* (56832) 66.8%
30	427* (141) 6.4%	180* (88) 11.7%	160* (76) 71.3%	766 (168) 9.0%	18574* (5976) 8.3%	29070* (13791) 9.9%	182807* (77788) 78.2%	230451* (75909) 30.6%
31	...	72* (55) 12.7%	...	72* (55) 4.7%	...	11220* (7971) 8.3%	...	11220* (7971) 6.4%
32	709* (344) 8.1%	475* (144) 47.0%	171* (75) 92.7%	1355* (357) 13.6%	20229* (8528) 8.5%	95182* (31499) 45.5%	114729* (51137) 88.9%	230140 (53815) 40.0%
33	641 (144) 15.5%	683* (174) 46.5%	146* (49) 43.2%	1469 (254) 24.7%	43407* (11310) 31.3%	167390 (31184) 53.8%	306660* (151272) 49.3%	517458* (157034) 48.3%

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	2775* (743) 15.0%	1111 (181) 35.6%	171* (50) 49.4%	4057 (734) 18.5%	86973 (18948) 15.7%	222894 (38565) 37.4%	205771* (66922) 58.6%	515639 (75860) 34.3%
35	1429* (494) 6.3%	856 (177) 25.1%	369 (65) 47.1%	2654 (526) 9.9%	48690 (11926) 8.0%	151290 (28495) 22.9%	511728 (79487) 46.0%	711708 (77491) 29.9%
36	106* (85) 1.5%	492* (158) 18.3%	275* (130) 34.9%	873* (280) 8.3%	8634* (6877) 3.7%	108540* (32856) 19.6%	284594* (102727) 24.1%	401768* (121997) 20.4%
37	117* (93) 2.9%	230* (84) 19.3%	148* (50) 35.5%	495* (163) 8.9%	6741* (5071) 5.3%	55954* (19628) 23.4%	409128 (69449) 27.0%	471823 (74703) 25.1%
38	66* (66) 2.5%	187* (72) 19.5%	208* (98) 50.1%	461* (149) 11.4%	1322* (1325) 1.3%	30140* (11663) 15.5%	254822* (115923) 55.3%	286285* (117053) 37.7%
39	111* (117) 1.7%	206* (347) 25.8%	26* (26) 7.7%	343* (379) 4.5%	3344* (3507) 2.0%	55082* (93979) 36.9%	20532* (20670) 9.8%	78958* (97031) 15.0%
41	863* (373) 19.5%	92* (79) 18.0%	...	955* (414) 19.4%	18953* (8901) 16.1%	15395* (13204) 18.9%	...	34348* (19644) 17.2%
42	3965* (995) 19.8%	168* (103) 11.3%	...	4133 (1026) 19.1%	84876 (19948) 17.4%	41051* (26958) 15.9%	...	125927* (32887) 15.3%
45	352* (245) 10.9%	416* (326) 70.5%	71* (43) 48.2%	839* (331) 21.1%	18474* (12610) 23.8%	53756* (43152) 49.2%	75139* (38243) 28.4%	147369* (50525) 32.7%
48	877* (732) 6.0%	115* (79) 12.7%	16* (14) 46.7%	1008* (725) 6.4%	20926* (15412) 4.9%	35805* (24531) 20.3%	23804* (21666) 34.0%	80535* (34308) 12.0%
49	1549* (742) 18.9%	303* (150) 16.3%	30* (72) 17.6%	1883* (827) 18.4%	74077* (39132) 27.5%	66320* (33899) 15.6%	18424* (43651) 12.6%	158821* (71986) 18.9%
50	1244* (699) 4.1%	167* (125) 9.2%	...	1411* (706) 4.4%	39662* (22701) 6.3%	50155* (37774) 17.7%	...	89816* (43489) 9.8%
51	413* (327) 4.5%	...	...	413* (327) 4.4%	9711* (7544) 5.2%	...	...	9711* (7544) 4.6%
55	...	...	...	...	...	...	...	...
72	1234* (737) 6.0%	42* (43) 6.3%	...	1276* (728) 6.0%	15966* (9609) 4.2%	5510* (5565) 6.7%	...	21476* (9623) 4.5%
73	2018* (608) 12.2%	271* (114) 18.2%	142* (110) 41.5%	2431* (624) 13.2%	60616* (25306) 14.4%	68575* (26852) 19.6%	159140* (89066) 48.4%	288332* (96390) 26.2%
75	917* (496) 3.5%	...	...	917* (496) 3.5%	24106* (12166) 5.8%	...	...	24106* (12166) 5.7%
76	...	...	...	...	...	...	...	...
80	1845* (627) 65.0%	1621 (254) 74.8%	1875 (297) 91.0%	5340 (759) 75.6%	68710 (15092) 67.6%	407857 (76271) 76.3%	2690542 (326370) 89.0%	3167109 (320514) 86.6%
A11	28041 (2660) 6.3%	11972 (867) 24.2%	5101 (401) 54.1%	45114 (2732) 8.9%	930404 (91416) 8.4%	2631010 (200604) 26.9%	6619177 (425533) 53.1%	10180590 (517374) 30.6%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.



NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-37

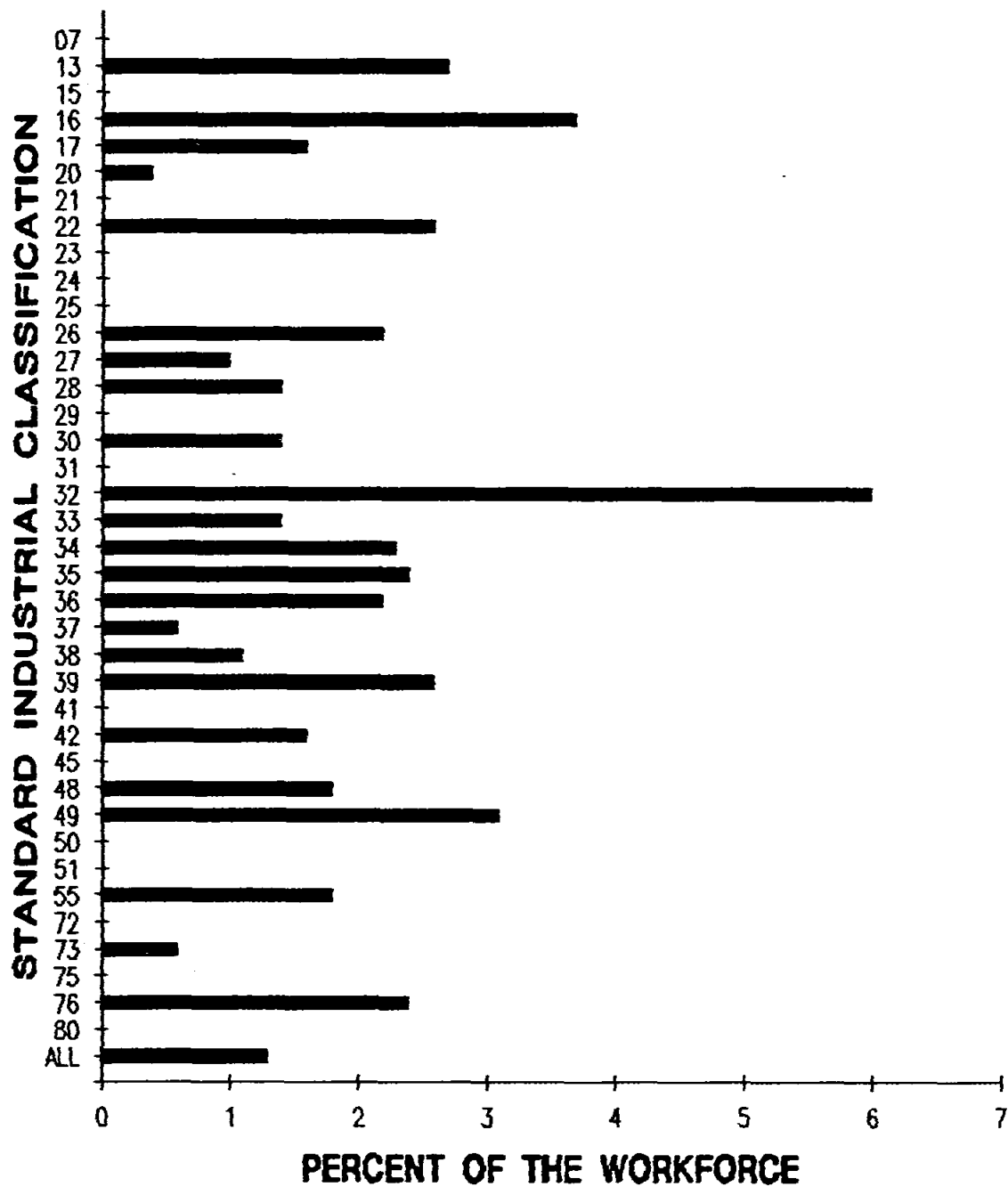
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
PROVIDE ONE OR MORE SCREENING TESTS TO MANAGEMENT ONLY

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	...	...	...	...	...	...	...	...
13	...	71* (65) 7.0%	...	71* (65) .7%	...	11258* (10218) 6.5%	...	11258* (10218) 2.7%
15-17	95* (78) .1%	89* (67) 2.1%	36* (38) 14.7%	219* (116) .2%	3934* (2678) .2%	20668* (15248) 2.8%	21661* (23411) 9.2%	46263* (30555) 1.5%
20-39	509* (197) .3%	463* (166) 1.5%	165* (58) 2.6%	1137 (183) .6%	27448* (9925) .6%	108940* (39933) 1.7%	156240* (48594) 1.9%	292628 (54946) 1.5%
40-49	298* (192) .6%	138* (86) 2.4%	53* (53) 11.3%	489* (227) .8%	12926* (8311) .9%	25056* (15016) 2.2%	26432* (26519) 4.6%	64414* (34308) 2.0%
50-59	460* (444) .8%	...	...	460* (444) .8%	7363* (7098) .7%	...	...	7363* (7098) .5%
70-79	325* (248) .4%	...	...	325* (248) .4%	11527* (9857) .8%	...	...	11527* (9857) .5%
80	...	...	...	...	...	...	...	...
ALL	1687* (583) .4%	761* (209) 1.5%	254* (88) 2.7%	2702 (601) .5%	63200* (17953) .6%	165921* (46443) 1.7%	204332* (60106) 1.6%	433453 (73360) 1.3%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
...No facilities observed.



**FIGURE III - 42**  
**ONE OR MORE TESTS PROVIDED ONLY TO MANAGEMENT**  
**(NOES 1981-1993)**



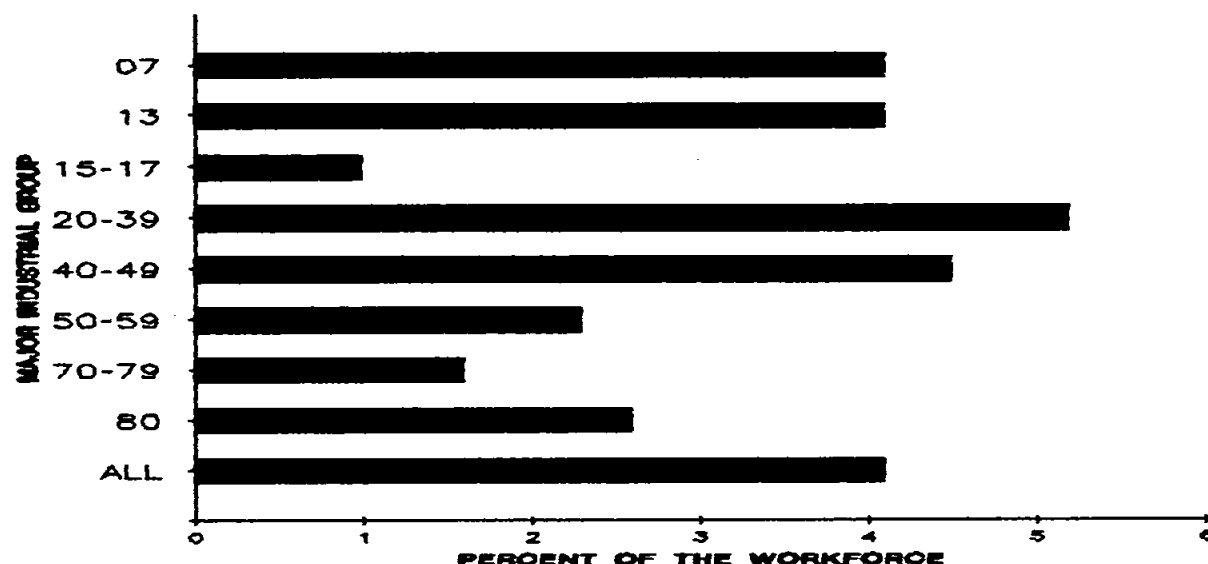
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
PROVIDE ONE OR MORE SCREENING TESTS TO MANAGEMENT ONLY

SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	...	...	...	...	...	...	...	...
13	...	71* (65) 7.0%	...	71* (65) .7%	...	11258* (10218) 6.5%	...	11258* (10218) 2.7%
15	...	...	...	...	...	...	...	...
16	...	...	36* (38) 33.3%	36* (38) .3%	...	...	21661* (23411) 21.4%	21661* (23411) 3.7%
17	95* (78) .2%	89* (67) 4.6%	...	184* (104) .3%	3934* (2678) .3%	20668* (15248) 6.2%	...	24603* (15489) 1.6%
20	...	17* (19) .5%	...	17* (19) .1%	...	5830* (6380) .9%	...	5830* (6380) .4%
21	...	...	...	...	...	...	...	...
22	...	99* (65) 6.3%	...	99* (65) 2.7%	...	18241* (13741) 5.3%	...	18241* (13741) 2.6%
23	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...
26	54* (76) 1.3%	23* (26) 1.5%	7* (6) 3.2%	85* (78) 1.4%	2936* (4109) 2.1%	3077* (3427) 1.1%	7945* (7094) 3.8%	13958* (8654) 2.2%
27	65* (67) .4%	...	8* (12) 2.4%	73* (68) .4%	3968* (4105) .8%	...	8291* (12965) 2.4%	12259* (13519) 1.0%
28	...	...	18* (20) 4.8%	18* (20) .2%	...	...	12804* (14334) 2.7%	12804* (14334) 1.4%
29	...	...	...	...	...	...	...	...
30	...	41* (42) 2.7%	...	41* (42) .5%	...	10398* (10640) 3.5%	...	10398* (10640) 1.4%
31	...	...	...	...	...	...	...	...
32	...	41* (49) 4.0%	37* (28) 20.0%	78* (55) .8%	...	5981* (7198) 2.9%	28732* (21763) 22.3%	34713* (22384) 6.0%
33	...	...	8* (9) 2.3%	8* (9) .1%	...	...	15004* (12279) 2.4%	15004* (12279) 1.4%

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	...	52* (33) 1.7%	25* (24) 7.3%	77* (41) .4%	...	15960* (10486) 2.7%	18698* (17846) 5.3%	34659* (20780) 2.3%
35	155* (92) .7%	24* (27) .7%	47* (31) 6.0%	226* (94) .8%	8437* (4889) 1.4%	9123* (10260) 1.4%	40219* (24903) 3.6%	57779* (27396) 2.4%
36	...	76* (47) 2.8%	15* (11) 1.9%	92* (49) .9%	...	19417* (14777) 3.5%	24544* (16467) 2.1%	43961* (22855) 2.2%
37	...	32* (36) 2.7%	...	32* (36) .6%	...	10474* (12368) 4.4%	...	10474* (12368) .6%
38	160* (135) 6.0%	11* (13) 1.1%	...	171* (138) 4.2%	7382* (5562) 7.1%	1338* (1609) .7%	...	8720* (6088) 1.1%
39	74* (69) 1.1%	46* (105) 5.7%	...	120* (118) 1.6%	4725* (4432) 2.8%	9101* (20560) 6.1%	...	13826* (20429) 2.6%
41	...	...	...	...	...	...	...	...
42	298* (192) 1.5%	...	...	298* (192) 1.4%	12926* (8311) 2.6%	...	...	12926* (8311) 1.6%
45	...	...	...	...	...	...	...	...
48	...	52* (41) 5.7%	...	52* (41) .3%	...	12170* (9720) 6.9%	...	12170* (9720) 1.8%
49	...	...	53* (53) 30.6%	53* (53) .5%	...	...	26432* (26519) 18.0%	26432* (26519) 3.1%
50	...	...	...	...	...	...	...	...
51	...	...	...	...	...	...	...	...
55	460* (444) 2.4%	...	...	460* (444) 2.4%	7363* (7098) 2.4%	...	...	7363* (7098) 1.8%
72	...	...	...	...	...	...	...	...
73	87* (121) .5%	...	...	87* (121) .5%	6760* (9408) 1.6%	...	...	6760* (9408) .6%
75	...	...	...	...	...	...	...	...
76	238* (237) 2.4%	...	...	238* (237) 2.4%	4767* (4733) 2.7%	...	...	4767* (4733) 2.4%
80	...	...	...	...	...	...	...	...
All	1687* (603) .4%	675* (187) 1.4%	254* (84) 2.7%	2616 (539) .5%	63200* (18565) .8%	153035* (42340) 1.6%	204332* (59462) 1.6%	420567 (62719) 1.3%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE III - 43**  
**ONE OR MORE TESTS PROVIDED TO ALL PRODUCTION WORKERS**  
**(NOES 1981-1983)**



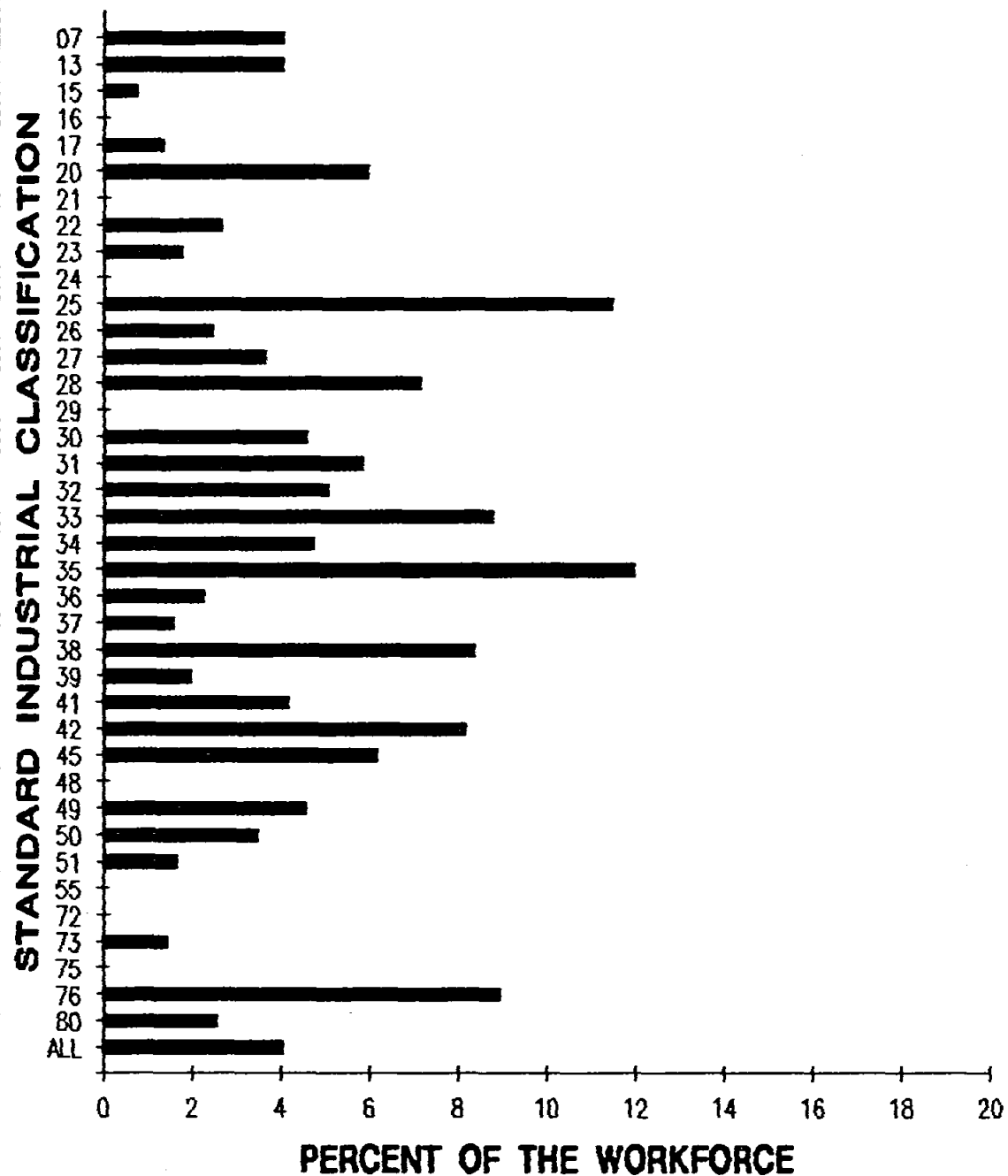
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-39

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 PROVIDE ONE OR MORE SCREENING TESTS TO ALL PRODUCTION WORKERS

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	162* (162) 2.9%	...	...	162* (162) 2.9%	4547* (4528) 4.4%	...	...	4547* (4528) 4.1%
13	...	105* (83) 10.3%	...	105* (83) 1.1%	...	16854* (12297) 9.7%	...	16854* (12297) 4.1%
15-17	439* (290) .5%	60* (68) 1.4%	...	499* (301) .5%	22327* (15706) 1.1%	7895* (8994) 1.1%	...	30222* (18546) 1.0%
20-39	2673 (572) 1.7%	1683 (298) 5.3%	453* (119) 7.2%	4808 (601) 2.5%	107828 (19124) 2.3%	359147 (68866) 5.6%	530939 (117781) 6.4%	997914 (116544) 5.2%
40-49	1514* (578) 2.8%	65* (65) 1.1%	76* (78) 16.3%	1655* (587) 2.8%	44999* (16271) 3.1%	13666* (13666) 1.2%	83820* (60938) 14.6%	142485* (58888) 4.5%
50-59	555* (475) .9%	108* (98) 4.1%	...	663* (511) 1.1%	18533* (16102) 1.6%	16924* (15649) 4.1%	...	35457* (25135) 2.3%
70-79	440* (440) .6%	73* (61) 3.1%	...	512* (484) .7%	6858* (8003) .5%	27853* (23178) 6.0%	...	34711* (29641) 1.6%
80	...	160* (112) 7.4%	30* (22) 1.5%	190* (120) 2.7%	...	21457* (15262) 4.0%	72828* (28185) 2.4%	94284* (36904) 2.6%
ALL	5782 (1091) 1.3%	2254 (362) 4.5%	559* (144) 5.9%	8595 (1157) 1.7%	205092 (34942) 1.9%	463797 (78590) 4.7%	687586 (135573) 5.5%	1356475 (142962) 4.1%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE III - 44**  
**ONE OR MORE TESTS PROVIDED TO ALL PRODUCTION WORKERS**  
 (NOES 1981-1983)



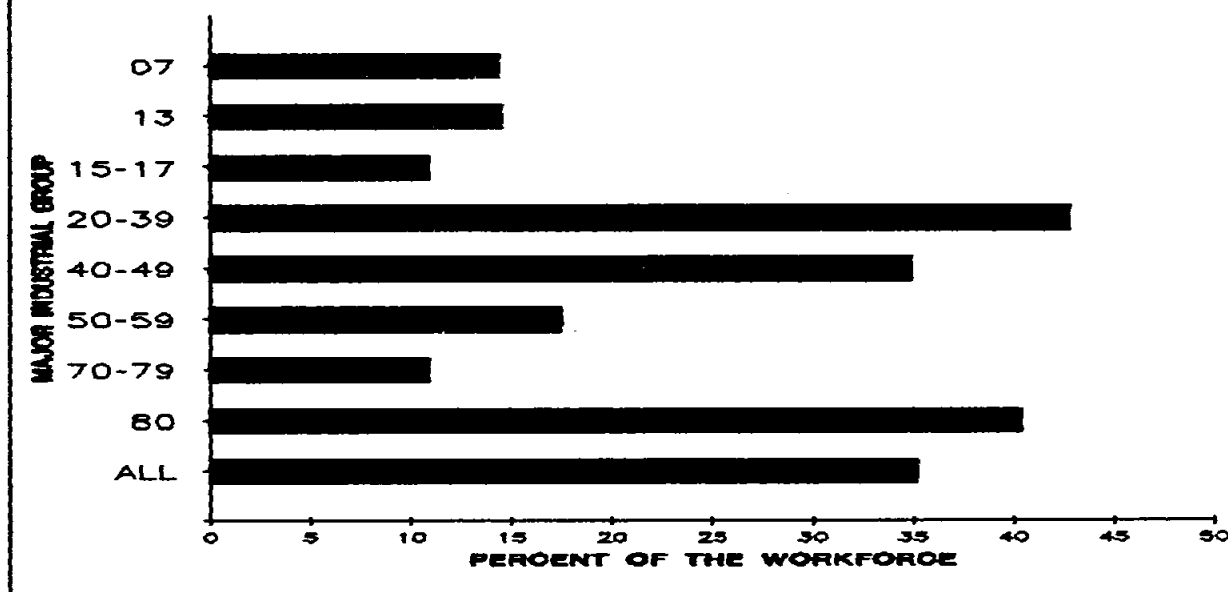
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
PROVIDE ONE OR MORE SCREENING TESTS TO PRODUCTION WORKERS

SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	162* (162) 2.9%	...	...	162* (162) 2.9%	4547* (4528) 4.4%	...	...	4547* (4528) 4.1%
13	...	105* (83) 10.3%	...	105* (83) 1.1%	...	16854* (12297) 9.7%	...	16854* (12297) 4.1%
15	233* (215) .9%	...	...	233* (215) .9%	7445* (6875) 1.3%	...	...	7445* (6875) .8%
16	...	...	...	...	...	...	...	...
17	207* (198) .4%	60* (68) 3.1%	...	267* (213) .4%	14882* (14236) 1.2%	7895* (8994) 2.4%	...	22777* (17270) 1.4%
20	532* (364) 4.7%	216* (92) 6.7%	40* (31) 7.1%	788* (408) 5.2%	15063* (10048) 3.9%	43110* (22750) 6.4%	35717* (28191) 7.3%	93889* (43044) 6.0%
21	...	...	...	...	...	...	...	...
22	...	70* (54) 4.4%	...	70* (54) 1.5%	...	19245* (14374) 5.5%	...	19245* (14374) 2.7%
23	...	...	15* (17) 6.3%	15* (17) .1%	...	...	22824* (26080) 11.0%	22824* (26080) 1.8%
24	...	...	...	...	...	...	...	...
25	67* (70) 1.6%	...	71* (70) 59.7%	138* (96) 2.6%	2532* (2667) 1.8%	...	56843* (56040) 46.2%	59375* (55961) 11.5%
26	...	68* (51) 4.3%	...	68* (51) 1.1%	...	15723* (12040) 5.6%	...	15723* (12040) 2.5%
27	...	18* (21) .9%	24* (22) 7.6%	41* (31) .2%	...	4078* (4949) 1.1%	39236* (30142) 11.3%	43315* (30872) 3.7%
28	455* (172) 7.4%	32* (32) 2.7%	16* (9) 4.1%	503* (171) 6.5%	18875* (7977) 10.4%	15104* (14976) 5.8%	32557* (15939) 6.8%	66536* (22652) 7.2%
29	...	...	...	...	...	...	...	...
30	171* (189) 2.5%	118* (95) 7.7%	3* (5) 1.2%	291* (195) 3.4%	6313* (7007) 2.8%	25743* (19889) 8.7%	2952* (5934) 1.3%	35008* (19921) 4.6%
31	50* (39) 5.3%	36* (33) 6.3%	...	86* (51) 5.6%	2188* (1707) 8.8%	8219* (7589) 6.1%	...	10406* (7748) 5.9%
32	190* (138) 2.2%	44* (64) 4.3%	...	234* (157) 2.3%	12292* (8906) 5.2%	17111* (25115) 8.2%	...	29403* (27422) 5.1%
33	314* (212) 7.6%	86* (42) 5.9%	54* (32) 15.9%	454* (218) 7.6%	15073* (10491) 10.9%	20690* (11955) 6.7%	57999* (34591) 9.3%	93761* (41447) 8.8%

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	431* (245) 2.3%	169* (72) 5.4%	22* (21) 6.5%	622* (258) 2.8%	15484* (5128) 2.8%	42411* (20265) 7.1%	14367* (13553) 4.1%	72263 (17603) 4.8%
35	65* (68) .3%	504* (193) 14.8%	163* (69) 20.8%	733* (224) 2.7%	2159* (2248) .4%	93464* (29817) 14.1%	191089* (80130) 17.2%	286712* (85140) 12.0%
36	59* (63) .8%	66* (46) 2.4%	23* (27) 2.9%	148* (91) 1.4%	5319* (5643) 2.3%	17437* (12010) 3.2%	22156* (24872) 1.9%	44912* (31824) 2.3%
37	98* (103) 2.5%	56* (54) 4.7%	3* (4) .8%	157* (122) 2.8%	6343* (6564) 5.0%	8327* (8152) 3.5%	15866* (16846) 1.0%	30536* (19349) 1.6%
38	55* (57) 2.1%	167* (128) 17.4%	19* (19) 4.5%	241* (128) 5.9%	4527* (4673) 4.3%	19870* (14057) 10.2%	39333* (37089) 8.5%	63730* (36891) 8.4%
39	184* (190) 2.8%	36* (77) 4.5%	...	220* (200) 2.9%	1659* (1710) 1.0%	8615* (14525) 5.8%	...	10274* (14606) 2.0%
41	306* (228) 6.9%	...	...	306* (228) 6.2%	8462* (6446) 7.2%	...	...	8462* (6446) 4.2%
42	1164* (518) 5.8%	65* (65) 4.4%	14* (12) 16.9%	1243* (523) 5.8%	34124* (15057) 7.0%	13666* (13666) 5.3%	19905* (17323) 26.6%	67695* (25281) 8.2%
45	44* (54) 1.4%	...	12* (15) 8.4%	56* (60) 1.4%	2413* (2977) 3.1%	...	25630* (24078) 9.7%	28043* (24575) 6.2%
48	...	...	...	...	...	...	...	...
49	...	...	50* (75) 29.1%	50* (75) .5%	...	...	38285* (48601) 26.1%	38285* (48601) 4.6%
50	203* (197) .7%	108* (98) 6.0%	...	311* (239) 1.0%	15014* (14536) 2.4%	16924* (15649) 6.0%	...	31938* (23598) 3.5%
51	352* (375) 3.9%	...	...	352* (375) 3.8%	3519* (3755) 1.9%	...	...	3519* (3755) 1.7%
55	...	...	...	...	...	...	...	...
72	...	...	...	...	...	...	...	...
73	150* (150) .9%	36* (35) 2.4%	...	186* (149) 1.0%	1347* (1347) .3%	15181* (14469) 4.3%	...	16528* (14370) 1.5%
75	...	...	...	...	...	...	...	...
76	290* (417) 3.0%	36* (45) 29.4%	...	326* (430) 3.3%	5511* (7915) 3.1%	12672* (15755) 52.1%	...	18183* (19376) 9.0%
80	...	160* (112) 7.4%	30* (22) 1.5%	190* (120) 2.7%	...	21457* (15262) 4.0%	72828* (28185) 2.4%	94284* (36904) 2.6%
All	5782 (1108) 1.3%	2254 (419) 4.5%	559* (146) 5.9%	8595 (1162) 1.7%	205092 (37720) 1.9%	463797 (89525) 4.7%	687586 (142790) 5.5%	1356475 (158858) 4.1%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE III - 45**  
**ONE OR MORE TESTS PROVIDED TO SELECTED WORKERS**  
**(NOES 1981-1983)**



NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-41

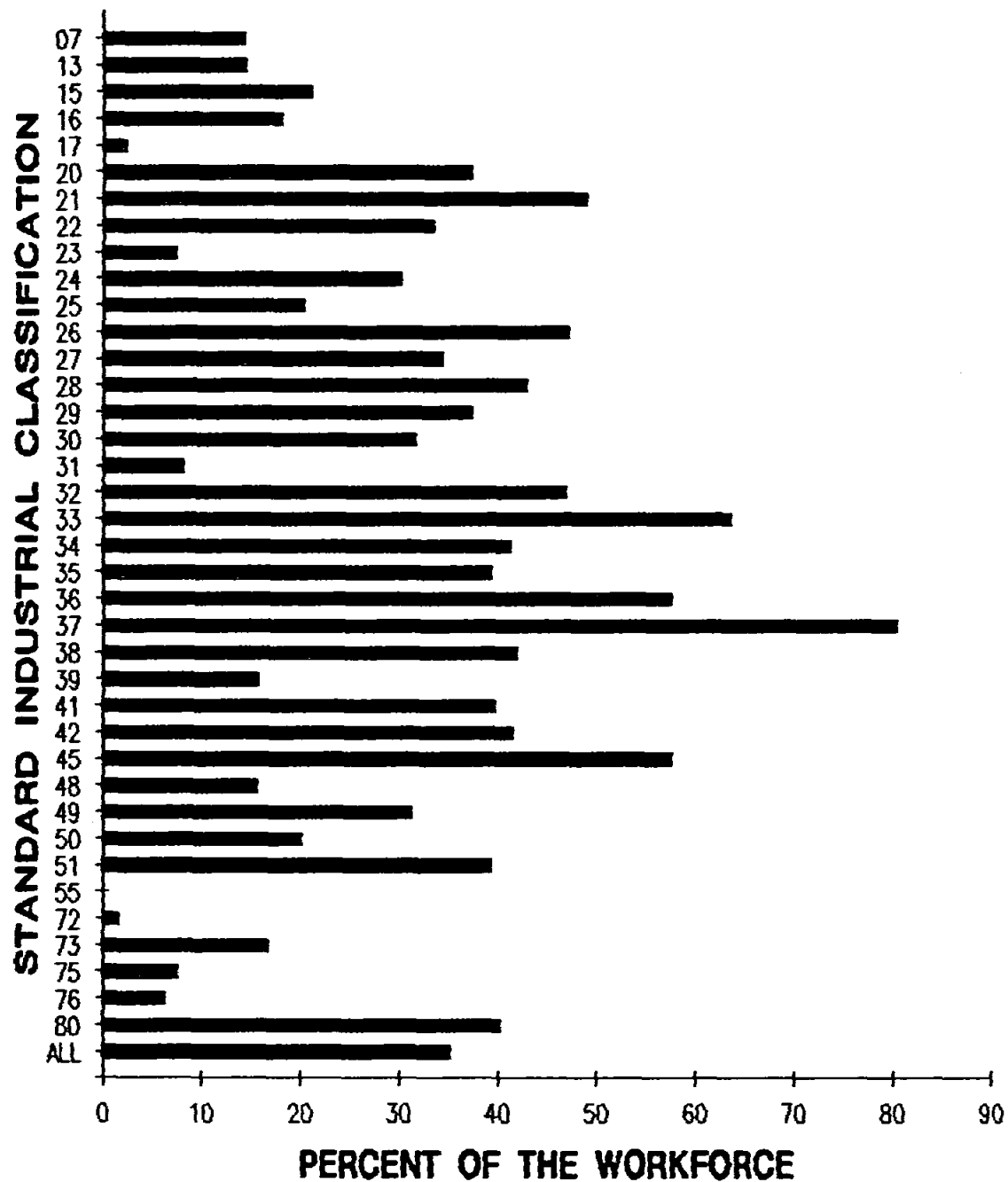
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 PROVIDE ONE OR MORE SCREENING TESTS TO SELECTED WORKERS

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	295* (238) 5.3%	...	...	295* (238) 5.2%	15999* (14202) 15.4%	...	...	15999* (14202) 14.5%
13	233* (160) 2.7%	114* (72) 11.2%	46* (52) 100.0%	393* (168) 4.1%	9793* (6510) 4.7%	19423* (12192) 11.2%	31383* (35291) 100.0%	60598* (35873) 14.6%
15-17	2317 (546) 2.5%	722* (257) 17.4%	140* (122) 57.8%	3180 (653) 3.2%	70525* (17874) 3.4%	117392* (38286) 15.9%	151398* (88365) 64.1%	339314* (94459) 11.0%
20-39	11966 (1774) 7.8%	7923 (828) 25.0%	3670 (271) 58.5%	23559 (2011) 12.3%	552450 (67400) 12.0%	1791140 (208979) 28.1%	5920452 (368547) 71.6%	8264043 (516370) 42.9%
40-49	10463 (1450) 19.7%	2381 (500) 40.7%	218* (105) 46.5%	13061 (1578) 22.0%	284910 (37342) 19.9%	473685 (115967) 41.1%	348186* (87409) 60.7%	1106781 (159314) 35.0%
50-59	7985 (1336) 13.7%	707* (325) 26.6%	...	8692 (1375) 14.2%	175994 (33791) 15.7%	93347* (40543) 22.8%	...	269342 (47576) 17.6%
70-79	2889* (1167) 3.9%	260* (109) 11.1%	80* (44) 22.5%	3228* (1168) 4.3%	82271* (33581) 5.9%	62936* (20155) 13.5%	95946* (64711) 28.3%	241154* (79343) 11.0%
80	316* (248) 11.1%	527* (132) 24.4%	785 (126) 38.1%	1628 (318) 23.0%	12071* (11270) 11.9%	122025* (31321) 22.8%	1347028 (244227) 44.6%	1481124 (250715) 40.5%
ALL	36463 (2973) 8.1%	12635 (1069) 25.3%	4938 (346) 52.3%	54037 (3225) 10.6%	1204014 (94325) 10.9%	2679948 (248527) 27.2%	7894393 (465140) 63.3%	11778355 (611430) 35.3%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.



**FIGURE III - 46**  
**ONE OR MORE TESTS PROVIDED TO SELECTED WORKERS**  
 (NOES 1981-1983)



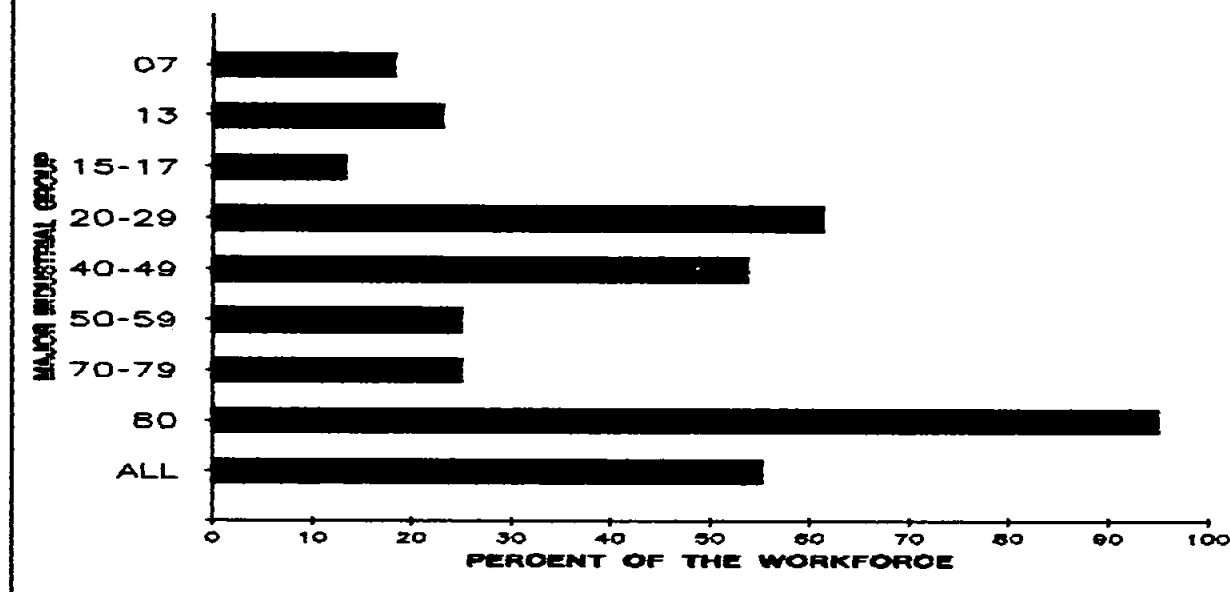
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
PROVIDE ONE OR MORE SCREENING TESTS TO SELECTED EMPLOYEES

SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	295* (238) 5.3%	...	...	295* (238) 5.2%	15999* (14202) 15.4%	...	...	15999* (14202) 14.5%
13	233* (160) 2.7%	114* (72) 11.2%	46* (52) 100.0%	393* (168) 4.7%	9793* (6510) 4.7%	19423* (12192) 11.2%	31383* (35291) 100.0%	60598* (35873) 14.6%
15	365* (252) 1.5%	458* (208) 41.4%	72* (95) 53.5%	896* (344) 3.4%	16090* (11132) 2.9%	86150* (34173) 43.5%	88625* (66889) 65.7%	190866* (73065) 21.3%
16	759* (262) 6.7%	201* (131) 17.9%	68* (62) 63.3%	1027* (302) 8.2%	21108* (7567) 7.4%	24767* (14952) 11.9%	62772* (48489) 62.0%	108648* (49962) 18.3%
17	1193* (557) 2.1%	63* (67) 3.3%	...	1257* (558) 2.1%	33327* (15230) 2.7%	6474* (6839) 2.0%	...	39801* (16313) 2.5%
20	1909* (397) 16.7%	864* (349) 26.9%	303* (114) 54.1%	3075* (549) 20.2%	90541* (17379) 23.3%	185185* (84468) 27.5%	306887* (106907) 62.4%	582613* (113693) 37.5%
21	4* (6) 14.6%	...	36* (60) 45.1%	40* (60) 36.7%	258* (345) 13.8%	...	55808* (50579) 49.8%	56066* (50438) 49.2%
22	34* (47) 1.2%	334* (88) 21.0%	179* (69) 59.7%	547* (126) 11.3%	3324* (4571) 3.1%	71897* (18409) 20.7%	165625* (62012) 63.4%	240847* (70154) 33.7%
23	282* (178) 2.3%	44* (35) 1.4%	58* (43) 24.1%	384* (172) 2.4%	9024* (5616) 2.1%	8492* (6866) 1.4%	76627* (48463) 36.8%	94143* (47265) 7.6%
24	776* (311) 7.2%	488* (146) 42.5%	19* (8) 18.1%	1283* (348) 10.7%	48467* (21112) 16.0%	92226* (27443) 50.2%	35767* (18789) 38.7%	176459* (43295) 30.4%
25	202* (145) 4.8%	211* (112) 19.9%	32* (25) 26.7%	445* (222) 8.3%	7989* (6119) 5.7%	49413* (29900) 19.3%	48937* (30396) 39.8%	106339* (42916) 20.5%
26	436* (197) 10.6%	532* (186) 33.9%	156* (56) 73.1%	1125* (324) 19.1%	31037* (14127) 22.5%	113673* (41908) 40.4%	151104* (42380) 73.0%	295814* (67758) 47.3%
27	1022* (481) 5.6%	684* (156) 36.5%	227* (94) 71.7%	1932* (508) 9.5%	30926* (12808) 6.5%	124941* (31888) 34.6%	253999* (73320) 73.5%	409866* (83490) 34.6%
28	973* (146) 15.8%	346* (124) 29.8%	175* (52) 46.2%	1495* (230) 19.4%	51044* (8049) 28.2%	114378* (35298) 43.9%	229068* (90999) 48.1%	394490* (99117) 43.0%
29	96* (109) 9.5%	26* (35) 9.0%	59* (39) 58.7%	182* (119) 13.0%	3667* (4156) 8.9%	4750* (6386) 7.5%	75019* (70084) 63.8%	83436* (71863) 37.6%
30	506* (299) 7.5%	381* (104) 24.8%	97* (41) 43.3%	984* (364) 11.6%	27542* (12762) 12.2%	80602* (22914) 27.4%	131767* (44311) 56.4%	239911* (60687) 31.9%
31	...	32* (38) 5.7%	3* (10) 14.0%	36* (38) 2.4%	...	10482* (12234) 7.7%	4015* (11440) 25.6%	14496* (15853) 8.2%
32	1163* (300) 13.2%	369* (127) 36.5%	184* (71) 99.9%	1717* (333) 17.2%	54139* (13850) 22.8%	87565* (30952) 41.9%	128993* (49687) 100.0%	270696* (55919) 47.1%
33	616* (268) 14.9%	572* (170) 39.0%	260* (58) 77.3%	1448* (344) 24.4%	26955* (11532) 19.5%	110368* (29001) 35.5%	545892* (76122) 87.8%	683215* (89534) 63.8%

SIC CODE					EMPLOYEES			
	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	2029* (536) 11.0%	1098 (147) 35.2%	309* (88) 89.3%	3436 (573) 15.6%	69256 (16010) 12.5%	243543 (31658) 40.8%	310928* (113459) 88.6%	623727 (126569) 41.5%
35	588* (272) 2.6%	742 (170) 21.8%	384 (95) 49.0%	1714 (367) 6.4%	33792* (15240) 5.6%	176806 (43045) 26.7%	728799 (140164) 65.5%	939396 (140274) 39.5%
36	469* (361) 6.6%	628 (143) 23.4%	554 (137) 70.5%	1652* (437) 15.6%	15113* (9334) 6.6%	178611 (38034) 32.3%	939835 (191976) 79.5%	1133560 (192792) 57.7%
37	518* (254) 13.0%	131* (54) 11.0%	377* (98) 90.7%	1027* (273) 18.4%	32059* (16763) 25.2%	42191* (18092) 17.6%	1441511 (248428) 95.2%	1515761 (247433) 80.6%
38	25* (38) .9%	248* (81) 26.0%	247* (108) 59.3%	520* (151) 12.8%	2223* (3424) 2.1%	47172* (18519) 24.3%	270407* (115061) 58.7%	319801* (120993) 42.1%
39	318* (160) 4.8%	191* (497) 24.0%	10* (10) 3.0%	519* (477) 6.7%	15095* (7639) 9.1%	48846* (141027) 32.7%	19466* (18968) 9.3%	83407* (135556) 15.9%
41	1043* (538) 23.6%	237* (77) 46.5%	...	1280* (547) 26.0%	36286* (14673) 30.8%	43215* (26171) 53.0%	...	79501* (28641) 39.9%
42	6196 (1113) 30.9%	799* (238) 53.9%	36* (34) 43.6%	7030 (1147) 32.6%	183029 (29855) 37.5%	137004* (38234) 52.9%	22218* (14343) 29.7%	342251 (47518) 41.7%
45	496* (398) 15.3%	118* (118) 20.0%	93* (37) 63.5%	708* (412) 17.8%	9224* (6830) 11.9%	47505* (47505) 43.5%	203993* (75933) 77.2%	260722* (85896) 57.8%
48	751* (722) 5.1%	313* (209) 34.7%	19* (16) 56.8%	1083* (735) 6.9%	16143* (14712) 3.8%	52921* (32612) 30.0%	37029* (29526) 52.8%	106093* (53437) 15.8%
49	1107* (727) 13.5%	712* (271) 38.2%	69* (72) 40.0%	1888* (778) 18.4%	20591* (16392) 7.6%	159397* (65182) 37.5%	84944* (53036) 58.0%	264932* (87950) 31.5%
50	4677* (1188) 15.4%	470* (144) 26.1%	...	5148 (1188) 16.0%	119188* (30928) 18.9%	66335* (21378) 23.4%	...	185523 (33222) 20.3%
51	3307 (693) 36.3%	237* (237) 100.0%	...	3544 (786) 37.9%	56806* (14420) 30.7%	27013* (27013) 100.0%	...	83818* (34843) 39.5%
55	...	...	...	...	...	...	...	...
72	216* (241) 1.0%	...	...	216* (241) 1.0%	8211* (9165) 2.2%	...	...	8211* (9165) 1.7%
73	1205* (806) 7.3%	224* (109) 15.0%	80* (44) 23.4%	1509* (792) 8.2%	41007* (26035) 9.7%	50264* (17150) 14.4%	95946* (64711) 29.2%	187217* (74300) 17.0%
75	1458* (850) 5.6%	...	...	1458* (850) 5.6%	32569* (18596) 7.9%	...	...	32569* (18596) 7.7%
76	9* (8) .1%	36* (45) 29.4%	...	45* (45) .5%	483* (423) .3%	12672* (15755) 52.1%	...	13156* (15699) 6.5%
80	316* (248) 11.1%	527* (132) 24.4%	785 (126) 38.1%	1628 (318) 23.0%	12071* (11270) 11.9%	122025* (31321) 22.8%	1347028 (244227) 44.6%	1481124 (250715) 40.5%
A11	35594 (3619) 8.0%	12432 (861) 25.1%	4938 (424) 52.4%	52964 (3919) 10.5%	1184376 (114849) 10.7%	2646305 (171842) 27.1%	7894393 (516743) 63.4%	11725074 (594628) 35.3%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE III - 47**  
**SCREENING TESTS PROVIDED TO SOME WORKERS**  
**(NOES 1981-1983)**



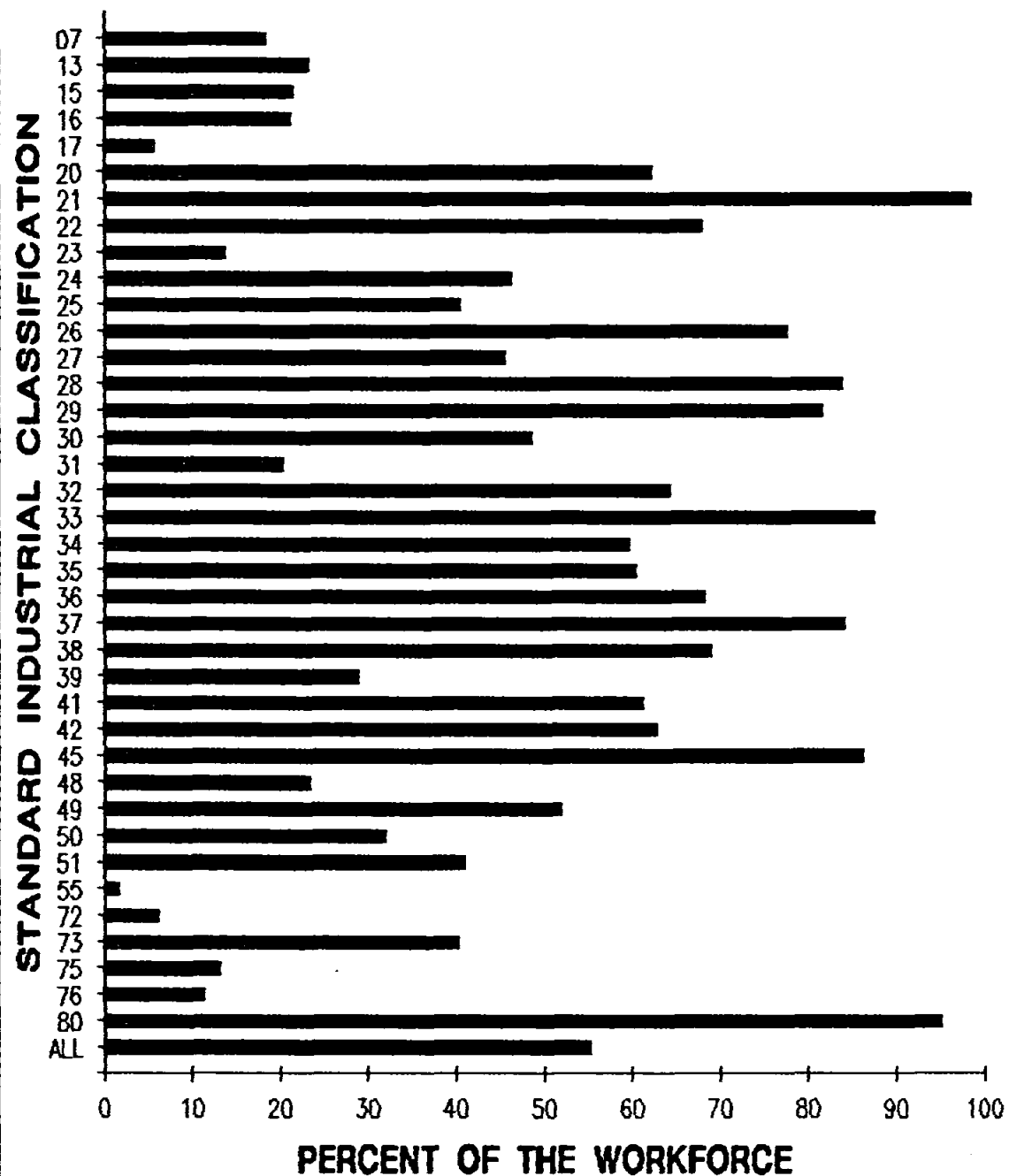
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-43

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 PROVIDE ONE OR MORE SCREENING TESTS TO AT LEAST SOME WORKERS

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	457* (295) 8.2%	...	...	457* (295) 8.1%	20546* (15118) 19.8%	...	...	20546* (15118) 18.6%
13	573* (256) 6.7%	290* (138) 28.5%	46* (52) 100.0%	910 (223) 9.4%	18071* (7543) 8.6%	47535* (22013) 27.3%	31383* (35291) 100.0%	96989* (42697) 23.4%
15-17	3502 (683) 3.7%	871* (269) 21.0%	157* (125) 65.0%	4530 (727) 4.6%	104115 (24516) 5.0%	145955* (40571) 19.8%	163367* (88842) 69.2%	413437 (96191) 13.5%
20-39	24270 (2158) 15.8%	15679 (1272) 49.4%	5207 (233) 83.0%	45156 (2645) 23.6%	1030025 (69111) 22.3%	3378833 (282319) 53.0%	7458991 (337469) 90.2%	11867849 (553929) 61.6%
40-49	18483 (2096) 34.8%	3617 (828) 61.9%	354* (123) 75.7%	22454 (2461) 37.8%	518655 (63920) 36.2%	718599 (176664) 62.3%	468715 (98302) 81.7%	1705969 (230107) 54.0%
50-59	10145 (1387) 17.4%	962* (354) 36.2%	...	11107 (1408) 18.2%	234373 (37015) 20.8%	154050* (55791) 37.7%	...	388423 (66206) 25.3%
70-79	7823 (1606) 10.7%	524* (149) 22.4%	196* (115) 55.3%	8543 (1536) 11.3%	201345 (43316) 14.5%	136868 (30629) 29.5%	215460* (103590) 63.5%	553673 (110848) 25.2%
80	2161* (695) 76.1%	1924 (268) 88.8%	2010 (312) 97.5%	6095 (821) 86.2%	80782 (17716) 79.5%	469697 (72567) 87.9%	2938054 (363130) 97.2%	3488533 (363842) 95.3%
ALL	67414 (3828) 15.0%	23867 (1617) 47.7%	7971 (445) 84.4%	99252 (4328) 19.5%	2207911 (115364) 19.9%	5051537 (349802) 51.2%	11275970 (524673) 90.4%	18535418 (721209) 55.5%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE III - 48**  
**SCREENING TESTS PROVIDED TO SOME WORKERS**  
 (NOES 1981-1983)



NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-44

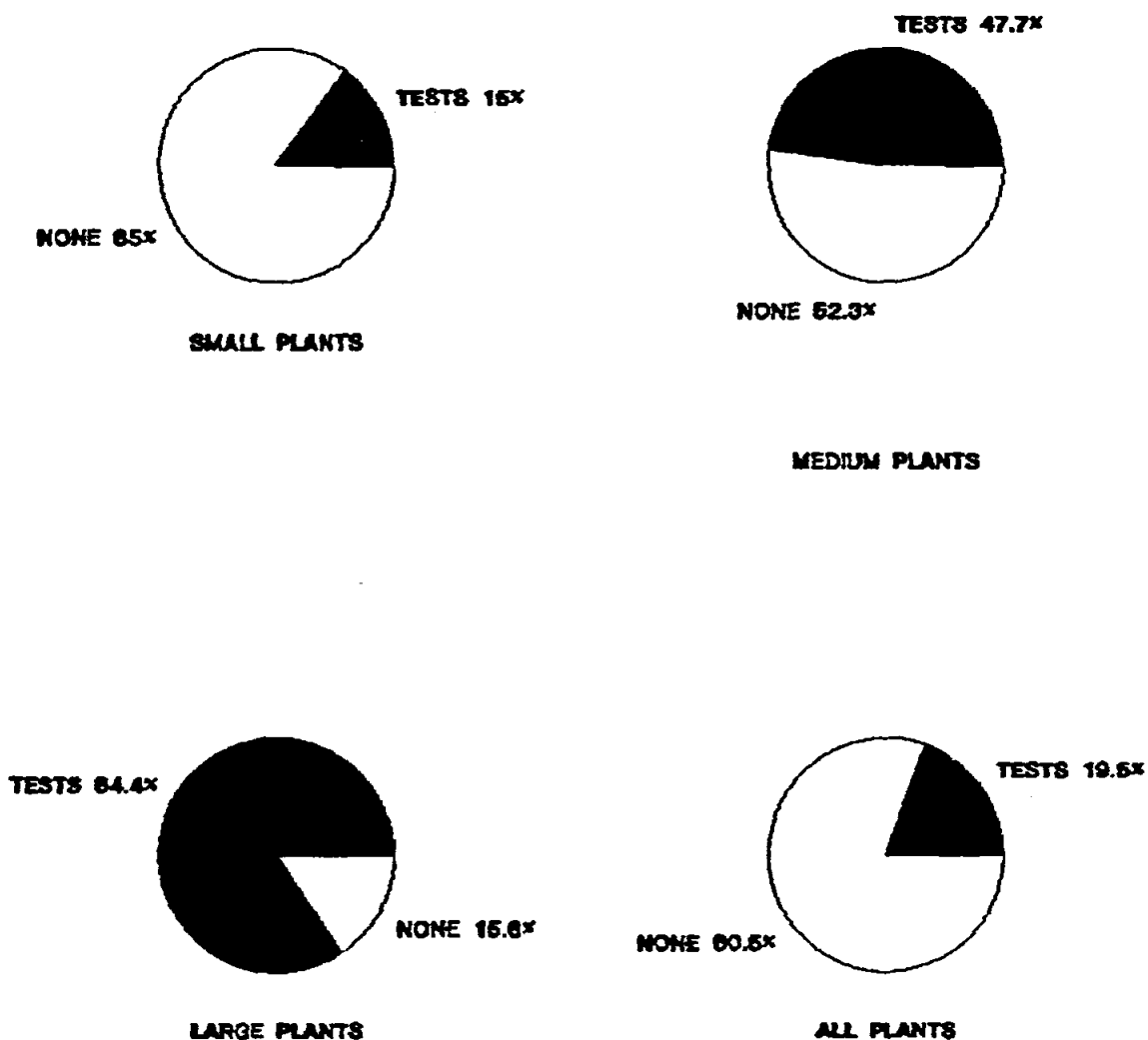
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
PROVIDE ONE OR MORE SCREENING TESTS TO AT LEAST SOME EMPLOYEES

SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	457* (295) 8.2%	...	...	457* (295) 8.1%	20546* (15118) 19.8%	...	...	20546* (15118) 18.6%
13	573* (256) 6.7%	290* (138) 28.5%	46* (5) 100.0%	910 (223) 9.4%	18071* (7543) 8.6%	47535* (22013) 27.3%	31383* (35291) 100.0%	96989* (42697) 23.4%
15	697* (428) 2.8%	458* (208) 41.4%	12* (95) 53.5%	1227* (484) 4.7%	19072* (11760) 3.4%	86150* (34173) 43.5%	88625* (66889) 65.7%	193847* (73223) 21.6%
16	1158* (480) 10.3%	201* (131) 17.9%	85* (63) 79.5%	1444* (505) 11.5%	27286* (10272) 9.6%	24767* (14952) 11.9%	74742* (47142) 73.8%	126795* (47222) 21.4%
17	1647* (649) 2.8%	212* (127) 11.1%	...	1859* (638) 3.1%	57757* (24558) 4.6%	35037* (20168) 10.6%	...	92794* (29827) 5.9%
20	2989 (619) 26.2%	1778 (419) 55.3%	524 (118) 93.7%	5292 (783) 34.8%	122914 (24503) 31.6%	391061* (103561) 58.0%	455647 (102879) 92.7%	969622 (121474) 62.4%
21	4* (6) 14.6%	...	79* (56) 99.6%	83* (56) 76.2%	258* (345) 13.8%	...	112133* (67572) 100.0%	112391* (67449) 98.6%
22	319* (159) 10.9%	838 (156) 52.8%	292* (85) 97.8%	1450 (215) 30.1%	16511* (7703) 15.6%	213780 (40463) 61.6%	257102* (98052) 98.5%	487392 (103009) 68.2%
23	484* (248) 3.9%	218* (86) 7.0%	74* (46) 30.4%	776* (253) 4.9%	22556* (12753) 5.3%	51110* (21176) 8.4%	99451* (52874) 47.7%	173117* (61569) 13.9%
24	1781* (487) 16.6%	855 (137) 74.4%	19* (8) 18.1%	2655 (474) 22.2%	91991* (26311) 30.3%	141284 (23482) 77.0%	35767* (18789) 38.7%	269042 (39120) 46.4%
25	294* (124) 7.0%	296* (157) 27.9%	119* (75) 99.6%	708* (232) 13.3%	12788* (6823) 9.2%	74918* (43004) 29.2%	122998* (62394) 100.0%	210704* (77889) 40.6%
26	765* (214) 18.6%	1144* (291) 72.9%	214* (73) 100.0%	2123 (378) 36.0%	56205* (14744) 40.8%	223039 (53969) 79.2%	206864* (65220) 100.0%	486108 (94396) 77.7%
27	1988* (528) 11.0%	984 (186) 52.5%	239* (93) 75.5%	3210 (602) 15.8%	66529 (15673) 13.9%	194261 (43051) 53.8%	280559 (68845) 81.1%	541350 (94218) 45.7%
28	2252 (389) 36.5%	832 (149) 71.7%	375 (63) 98.8%	3460 (466) 44.9%	90374 (11026) 50.0%	211843 (36434) 81.2%	470067 (99069) 98.7%	772284 (108436) 84.1%
29	96* (109) 9.5%	264* (124) 90.1%	101* (42) 100.0%	462* (191) 32.9%	3667* (4156) 8.9%	60212* (21521) 95.2%	117545* (70259) 100.0%	181424* (79046) 81.8%
30	1053* (336) 15.7%	527* (147) 34.3%	193* (74) 86.0%	1772 (395) 20.9%	49475* (13813) 22.0%	101858* (27574) 34.6%	216359* (74266) 92.6%	367692 (81850) 48.8%
31	50* (39) 5.3%	140* (75) 24.7%	3* (10) 14.0%	194* (88) 12.7%	2188* (1707) 8.8%	29920* (17165) 22.1%	4015* (11440) 25.6%	36122* (19513) 20.5%
32	1872* (493) 21.3%	727 (132) 71.8%	184* (71) 99.9%	2783 (526) 27.8%	74367 (16925) 31.4%	167586 (33767) 80.2%	128993* (49687) 100.0%	370947 (54405) 64.5%
33	1259 (244) 30.5%	1222 (185) 83.2%	317 (59) 94.1%	2799 (334) 47.1%	73159 (12762) 52.8%	271589 (37743) 87.3%	594583 (83056) 95.7%	939331 (89437) 87.7%

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	4659 (811) 25.2%	1952 (175) 62.5%	341* (89) 98.5%	6951 (799) 31.6%	152266 (22067) 27.4%	402286 (34499) 67.4%	345264* (103625) 98.4%	899816 (112450) 59.9%
35	2130 (531) 9.4%	1602 (258) 47.0%	690 (77) 88.0%	4421 (651) 16.5%	86198 (18484) 14.2%	323893 (52614) 49.0%	1030460 (134605) 92.6%	1440551 (135137) 60.5%
36	634* (375) 8.9%	1091 (160) 40.6%	665* (176) 84.6%	2390 (493) 22.6%	29066* (12020) 12.6%	270631 (36977) 49.0%	1045187 (217653) 88.4%	1344885 (227194) 68.4%
37	647* (281) 16.3%	333* (97) 28.0%	389* (99) 93.5%	1369 (322) 24.5%	39236* (18900) 30.9%	74693* (22646) 31.2%	1472960 (261722) 97.3%	1586890 (255416) 84.4%
38	306* (168) 11.4%	518 (122) 54.1%	353* (112) 84.9%	1177 (231) 29.0%	15454* (8299) 14.8%	86780 (21666) 44.6%	423038* (119842) 91.9%	525272 (122373) 69.2%
39	687* (230) 10.5%	358* (705) 44.9%	36* (26) 10.7%	1082* (699) 14.1%	24823* (7168) 15.0%	88089* (176195) 58.9%	39998* (24337) 19.1%	152910* (172541) 29.1%
41	2212* (706) 50.1%	329* (126) 64.5%	...	2541* (752) 51.5%	63701* (16399) 54.2%	58610* (32330) 71.9%	...	122311* (37700) 61.4%
42	10976 (1382) 54.8%	1014* (282) 68.4%	50* (35) 60.4%	12040 (1518) 55.8%	289611 (32742) 59.4%	185778* (53387) 71.8%	42123* (22071) 56.3%	517512 (68141) 63.0%
45	892* (524) 27.5%	534* (387) 90.6%	144* (56) 97.6%	1570* (628) 39.5%	30111* (15782) 38.9%	101262* (74123) 92.6%	258326* (79623) 97.8%	389698* (97914) 86.4%
48	877* (732) 6.0%	479* (233) 53.1%	19* (16) 56.8%	1375* (746) 8.8%	20926* (15412) 4.9%	100895* (42994) 57.2%	37029* (29526) 52.8%	158851* (59474) 23.6%
49	2656* (1099) 32.3%	928* (337) 49.8%	142* (88) 82.0%	3726* (1228) 36.3%	94668* (43025) 35.1%	212490* (80331) 49.9%	131237* (60964) 89.5%	438395* (123652) 52.1%
50	6026 (1289) 19.9%	725* (217) 40.2%	...	6751 (1334) 21.0%	166685 (37576) 26.4%	127037* (46775) 44.9%	...	293723 (65776) 32.2%
51	3659 (820) 40.1%	237* (237) 100.0%	...	3896 (896) 41.7%	60325* (15125) 32.6%	27013* (27013) 100.0%	...	87337* (35012) 41.2%
55	460* (444) 2.4%	...	...	460* (444) 2.4%	7363* (7098) 2.4%	...	...	7363* (7098) 1.8%
72	1450* (788) 7.0%	42* (43) 6.3%	...	1493* (778) 7.0%	24178* (14039) 6.4%	5510* (5565) 6.7%	...	29688* (13747) 6.3%
73	3460 (678) 20.9%	446* (140) 29.9%	196* (115) 57.4%	4101 (640) 22.3%	109731* (34144) 26.0%	118685 (29184) 33.9%	215460* (103590) 65.5%	443876* (119492) 40.4%
75	2376* (1015) 9.1%	...	...	2376* (1015) 9.1%	56676* (23141) 13.7%	...	...	56676* (23141) 13.4%
76	537* (515) 5.5%	36* (45) 29.4%	...	574* (543) 5.8%	10761* (9858) 6.0%	12672* (15755) 52.1%	...	23434* (23125) 11.6%
80	2161* (695) 76.1%	1924 (268) 88.8%	2010 (312) 97.5%	6095 (821) 86.2%	80782 (17716) 79.5%	469697 (72567) 87.9%	2938054 (363130) 97.2%	3488533 (363842) 95.3%
All	66545 (4138) 14.9%	23556 (1038) 47.5%	7971 (539) 84.6%	98072 (4453) 19.4%	2188274 (127561) 19.8%	4998490 (210960) 51.1%	11275970 (553171) 90.5%	18462734 (670191) 55.5%

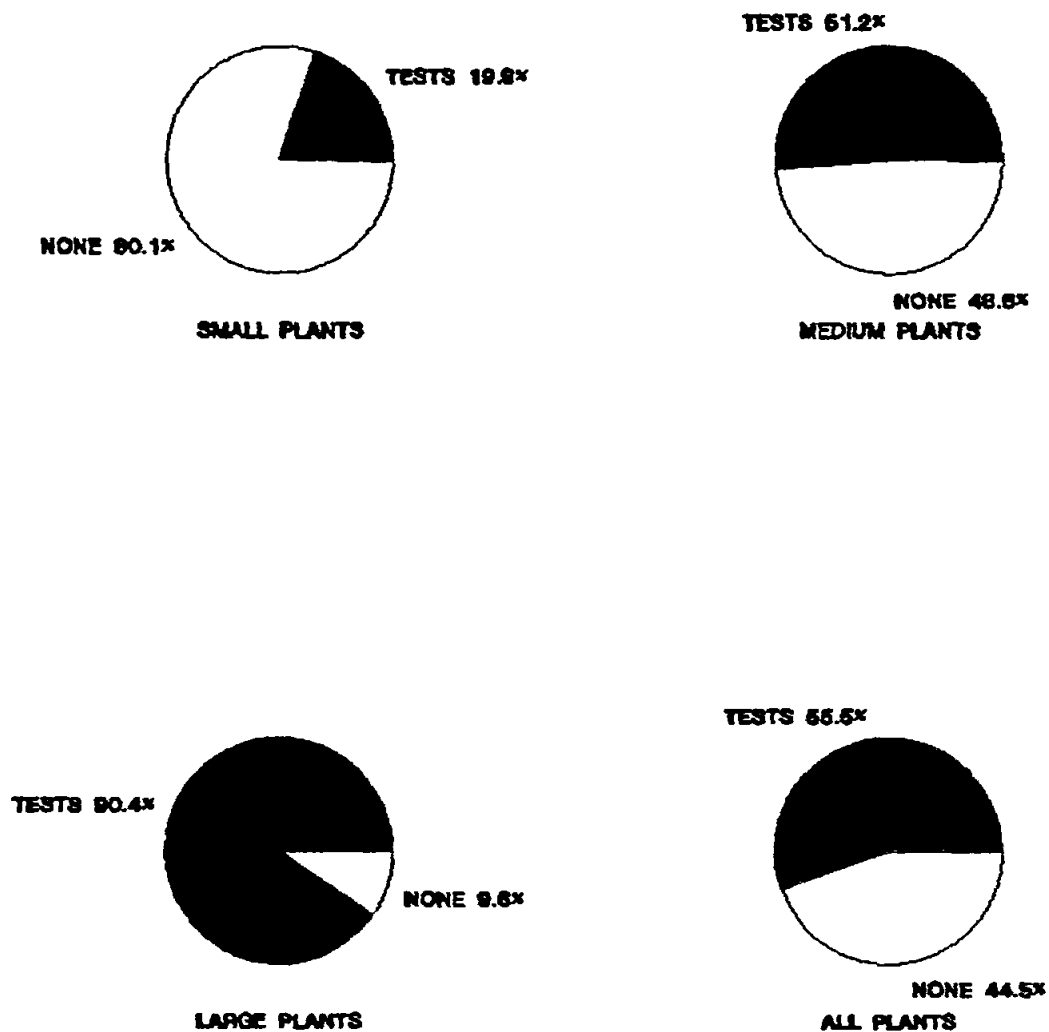
\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE III - 49**  
**PLANTS PROVIDING SOME SCREENING TESTS**  
**(NOES 1981-1983)**





**FIGURE III - 50**  
**WORKERS IN PLANTS PROVIDING SOME TESTS**  
**(NOES 1981-1983)**



(see text on questionnaire item 22 for definitions and notes)

<b>Ophthalmology</b>	<b><u>1</u></b>	<b><u>2</u></b>	<b><u>3</u></b>	<b><u>4</u></b>	<b><u>5</u></b>
----------------------	-----------------	-----------------	-----------------	-----------------	-----------------

(Note: Response categories are as shown in the display of question 22.)

(1) Response 2, 4, or 5 - Provision of ophthalmology tests to all, production, or selected workers

The estimates of the plants which provide ophthalmology testing to all workers, production workers or selected workers, and workers in those plants (by number and proportion of the totals) are displayed in Figures III-51 and III-52, and Tables III-45 and III-46.

**Figure III-51      Ophthalmology tests provided to all or selected workers  
                              (by major industrial group)**

**Figure III-52      Ophthalmology tests provided to all or selected workers  
                                 (by 2-digit SIC)**

**Table III-45**      Number and percent of plants and employees in plants which provide ophthalmology tests to all or selected workers (by major industry group)

**Table III-46**      **Number and percent of plants and employees in plants which provide ophthalmology tests to all or selected workers (by 2-digit SIC)**

(2) Response 1 or 3 - No provision of ophthalmology tests, or testing of management personnel only

The estimates of plants which either do not provide any opthalmology tests or provide them only to management personnel, and workers in those plants (by number and proportion of the totals) are displayed in Figures III-53 and III-54, and Tables III-47 and III-48.

**Figure III-53      Ophthalmology tests not provided or for management only  
                              (by major industrial group)**

**Figure III-54      Ophthalmology tests not provided or for management only  
                                 (by 2-digit SIC)**

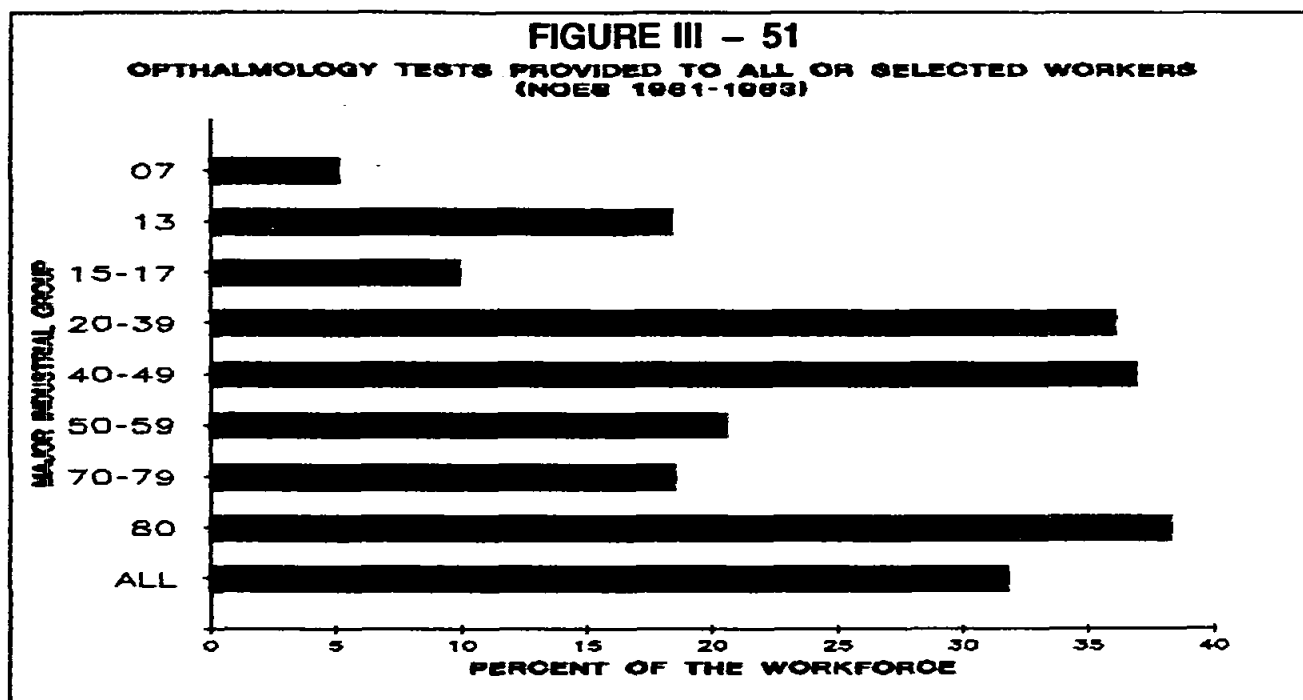
**Table III-47**      Number and percent of plants and employees in plants which provide no ophthalmology tests or examine management only (by major industrial group)

**Table III-48**      **Number and percent of plants and employees in plants which provide no ophthalmology tests or examine management only (by 2-digit SIC)**

**(3) Response 1, 2, 3, 4, or 5 - Provision of ophthalmology tests**

**The estimated proportions of plants and workers in those plants corresponding to each of the five possible responses to the ophthalmology inquiry are presented in Figure III-55.**

**Figure III-55      Provision of ophthalmology tests**



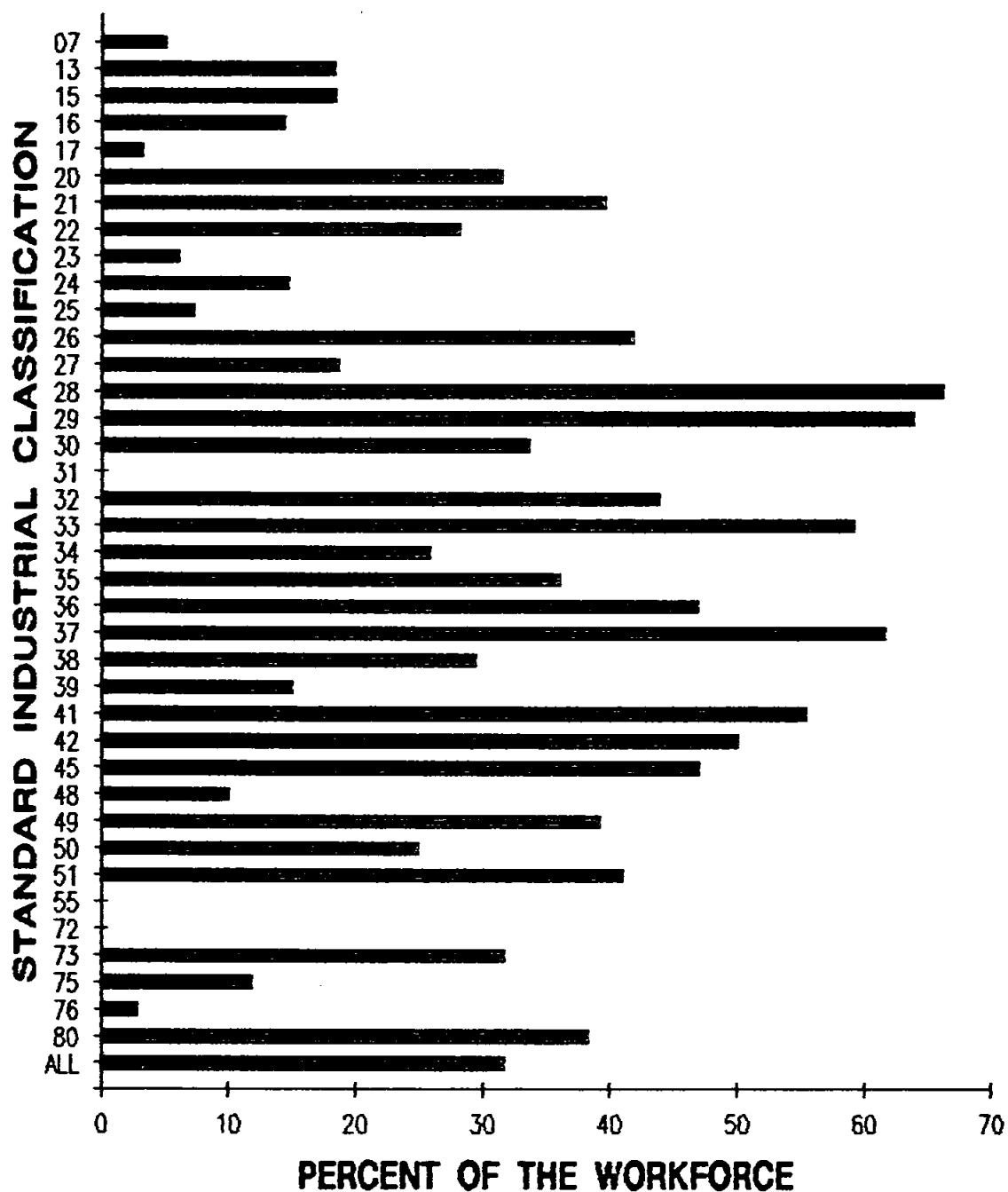
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-45

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH PROVIDE OPHTHALMOLOGY TESTS TO ALL OR SELECTED WORKERS

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	144* (138) 2.6%	...	...	144* (138) 2.6%	5758* (5510) 5.6%	...	...	5758* (5510) 5.2%
13	457* (221) 5.3%	187* (106) 18.4%	46* (52) 100.0%	690* (202) 7.1%	15855* (7035) 7.6%	29206* (16103) 16.8%	31383* (35291) 100.0%	76444* (41340) 18.5%
15-17	2753* (773) 2.9%	736* (265) 17.8%	105* (104) 43.2%	3594 (814) 3.6%	74839* (22085) 3.6%	117763* (38920) 16.0%	113114* (80420) 47.9%	305716* (83885) 10.0%
20-39	11059 (1121) 7.2%	6123 (553) 19.3%	3271 (232) 52.2%	20453 (1229) 10.7%	420877 (43121) 9.1%	1298615 (132792) 20.4%	5244586 (372366) 63.5%	6964078 (432534) 36.2%
40-49	15382 (2094) 28.9%	1941 (428) 33.2%	232* (103) 49.6%	17555 (2248) 29.5%	411088 (61846) 28.7%	414577 (98220) 35.9%	342761* (99597) 59.7%	1168426 (159487) 37.0%
50-59	8966 (1372) 15.4%	750* (316) 28.2%	...	9717 (1414) 15.9%	195047 (31492) 17.3%	121718* (52980) 29.8%	...	316765 (66264) 20.7%
70-79	4076* (1150) 5.6%	398* (131) 17.0%	172* (112) 48.6%	4646 (1150) 6.1%	99221* (33364) 7.1%	108121* (27681) 23.3%	200873* (102687) 59.2%	408215* (112014) 18.6%
80	54* (64) 1.9%	529 (109) 24.4%	837 (163) 40.6%	1421 (169) 20.1%	2663* (3148) 2.6%	145835* (37881) 27.3%	1254847 (190976) 41.5%	1403345 (181031) 38.4%
ALL	42891 (3085) 9.5%	10664 (836) 21.3%	4663 (342) 49.4%	58219 (3261) 11.4%	1225349 (91470) 11.1%	2235836 (184561) 22.7%	7187563 (450894) 57.6%	10648748 (520584) 31.9%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
...No facilities observed.

**FIGURE III - 52**  
**OPHTHALMOLOGY TESTS PROVIDED TO ALL OR SELECTED WORKERS**  
**(NOES 1981-1983)**



NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
PROVIDE OPHTHALMOLOGY TESTS TO ALL OR SELECTED WORKERS

SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	144* (138) 2.6%	...	...	144* (138) 2.6%	5758* (5510) 5.6%	...	...	5758* (5510) 5.2%
13	457* (221) 5.3%	187* (106) 18.4%	46* (52) 100.0%	690* (202) 7.1%	15855* (7035) 7.6%	29206* (16103) 16.8%	31383* (35291) 100.0%	76444* (41340) 18.5%
15	464* (369) 1.9%	458* (208) 41.4%	67* (96) 49.8%	990* (427) 3.8%	11627* (9650) 2.1%	86150* (34173) 43.5%	68468* (72307) 50.8%	166245* (74829) 18.6%
16	943* (473) 8.4%	155* (122) 13.8%	37* (37) 34.9%	1135* (492) 9.1%	24272* (10446) 8.5%	17243* (12690) 8.3%	44646* (38319) 44.1%	86161* (39417) 14.5%
17	1345* (578) 2.3%	123* (106) 6.4%	...	1469* (573) 2.4%	38941* (16610) 3.1%	14369* (12505) 4.3%	...	53310* (19377) 3.4%
20	1607* (426) 14.1%	823* (263) 25.6%	284* (106) 50.8%	2714* (530) 17.9%	63086* (16901) 16.2%	178426* (61034) 26.5%	251201* (96006) 51.1%	492714* (91444) 31.7%
21	4* (6) 14.6%	...	17* (28) 21.6%	21* (25) 19.7%	258* (345) 13.8%	...	45151* (41947) 40.3%	45409* (41728) 39.8%
22	...	227* (102) 14.3%	200* (73) 66.8%	427* (159) 8.9%	...	59772* (28484) 17.2%	142634* (54207) 54.6%	202406* (69071) 28.3%
23	181* (138) 1.4%	47* (40) 1.5%	27* (17) 11.0%	255* (142) 1.6%	9927* (7987) 2.3%	14111* (11915) 2.3%	52389* (27886) 25.1%	76427* (30019) 6.2%
24	454* (253) 4.2%	213* (122) 18.5%	12* (10) 11.5%	679* (292) 5.7%	24054* (14682) 7.9%	33828* (19349) 18.4%	27621* (22969) 29.9%	85503* (31955) 14.8%
25	48* (74) 1.1%	171* (97) 16.1%	...	219* (144) 4.1%	3348* (5195) 2.4%	34909* (19493) 13.6%	...	38257* (22459) 7.4%
26	275* (160) 6.7%	396* (152) 25.3%	178* (84) 83.0%	849* (245) 14.4%	16794* (10835) 12.2%	64313* (20250) 22.8%	181965* (72750) 88.0%	263072* (81287) 42.0%
27	1119* (322) 6.2%	175* (84) 9.4%	131* (60) 41.3%	1425* (337) 7.0%	34284* (9015) 7.2%	32550* (14182) 9.0%	156223* (50114) 45.2%	223057* (53716) 18.8%
28	1631* (369) 26.4%	661* (131) 57.0%	310* (64) 81.6%	2602* (409) 33.7%	63484* (10845) 35.1%	160306* (30587) 61.5%	385208* (78866) 80.9%	608999* (77186) 66.3%
29	96* (109) 9.5%	117* (124) 40.1%	101* (42) 100.0%	315* (198) 22.4%	3667* (4156) 8.9%	20684* (16579) 32.7%	117545* (70259) 100.0%	141895* (76226) 64.0%
30	46* (50) .7%	288* (148) 18.7%	161* (69) 71.9%	495* (183) 5.8%	2354* (2560) 1.0%	55185* (28839) 18.7%	196679* (74225) 84.2%	254218* (85976) 33.8%
31	...	...	...	...	...	...	...	...
32	1038* (414) 11.8%	546* (124) 54.0%	134* (62) 72.9%	1719* (439) 17.2%	35432* (10413) 14.9%	115930* (29875) 55.5%	101627* (48533) 78.8%	252989* (61731) 44.0%
33	496* (259) 12.0%	372* (180) 25.3%	251* (57) 74.3%	1118* (322) 18.8%	22515* (11194) 16.3%	87520* (38189) 28.1%	525058* (92021) 84.5%	635094* (104579) 59.3%

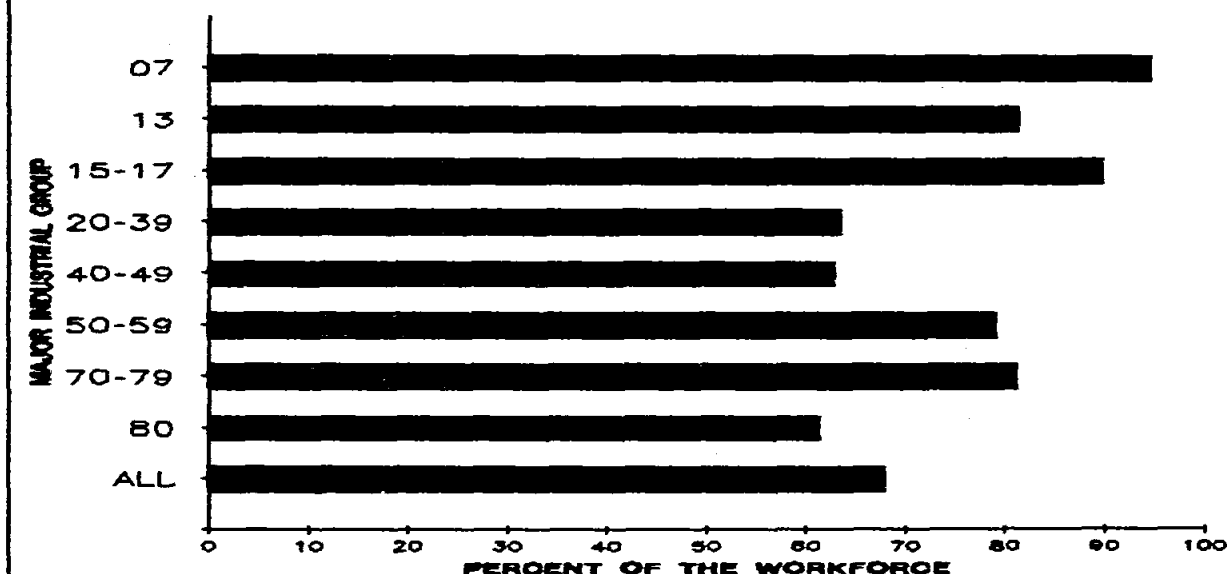
SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	2482* (669) 13.4%	579 (91) 18.5%	183* (82) 52.9%	3244 (672) 14.8%	67934 (16167) 12.2%	130088 (24155) 21.8%	192475* (84174) 54.8%	390497 (95102) 26.0%
35	1009* (466) 4.5%	683* (180) 20.0%	377 (75) 48.1%	2069* (549) 7.7%	37373* (13069) 6.2%	110738 (24376) 16.8%	714098 (132263) 64.2%	862209 (135106) 36.2%
36	...	384* (142) 14.3%	439* (111) 55.8%	823 (203) 7.8%	...	99911* (36988) 18.1%	826833 (174567) 69.9%	926745 (188507) 47.1%
37	464* (292) 11.7%	102* (52) 8.6%	258* (72) 62.0%	824* (308) 14.8%	29615* (20001) 23.3%	29672* (16496) 12.4%	1101026* (278583) 72.7%	1160314 (277208) 61.7%
38	55* (57) 2.1%	181* (71) 19.0%	173* (85) 41.5%	409* (133) 10.1%	4527* (4673) 4.3%	33424* (14576) 17.2%	186853* (84956) 40.6%	224805* (87872) 29.6%
39	53* (52) .8%	156* (252) 19.5%	36* (26) 10.7%	245* (274) 3.2%	2223* (2205) 1.3%	37246* (51092) 24.9%	39998* (24337) 19.1%	79467* (55977) 15.1%
41	1939* (768) 43.9%	329* (126) 64.5%	...	2268* (808) 46.0%	52229* (19915) 44.4%	58610* (32330) 71.9%	...	110839* (39465) 55.6%
42	9359 (1287) 46.7%	909* (252) 61.4%	37* (33) 45.6%	10305 (1394) 47.7%	231423 (30063) 47.4%	157170* (40951) 60.7%	23910* (13768) 32.0%	412503 (51798) 50.2%
45	683* (551) 21.1%	...	90* (36) 61.2%	773* (552) 19.4%	22623* (15924) 29.2%	...	190241* (82889) 72.0%	212864* (84963) 47.2%
48	751* (72) 5.1%	135* (92) 14.9%	16* (14) 46.7%	901* (717) 5.8%	16143* (14712) 3.8%	28342* (20146) 16.1%	23804* (21666) 34.0%	68288* (40792) 10.2%
49	2013* (913) 24.5%	497* (220) 26.7%	89* (74) 51.5%	2599* (950) 25.4%	77158* (38036) 28.6%	149791* (66916) 35.2%	104805* (55062) 71.5%	331754* (101606) 39.4%
50	5307 (1220) 17.5%	513* (179) 28.5%	...	5821 (1253) 18.1%	134722 (31173) 21.4%	94705* (45868) 33.4%	...	229427* (63391) 25.1%
51	3659 (820) 40.1%	237* (237) 100.0%	...	3896 (896) 41.7%	60325* (15125) 32.6%	27013* (27013) 100.0%	...	87337* (35012) 41.2%
55	...	...	...	...	...	...	...	...
72	...	...	...	...	...	...	...	...
73	1857* (581) 11.2%	398* (131) 26.7%	172* (112) 50.5%	2426 (566) 13.2%	42462* (22567) 10.1%	108121* (27681) 30.9%	200873* (102687) 61.1%	351455* (111941) 31.9%
75	1921* (927) 7.3%	...	...	1921* (927) 7.3%	50766* (22718) 12.3%	...	...	50766* (22718) 12.0%
76	299* (415) 3.1%	...	...	299* (415) 3.0%	5994* (7820) 3.4%	...	...	5994* (7820) 3.0%
80	54* (64) 1.9%	529 (109) 24.4%	837 (163) 40.6%	1421 (169) 20.1%	2663* (3148) 2.6%	145835* (37881) 27.3%	1254847 (190976) 41.5%	1403345 (181031) 38.4%
A11	42254 (3325) 9.5%	10615 (838) 21.4%	4663 (360) 49.5%	57532 (3745) 11.4%	1213836 (108534) 11.0%	2221688 (154795) 22.7%	7187563 (459800) 57.7%	10623087 (512941) 31.9%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

FIGURE III - 53

OPHTHALMOLOGY TESTS NOT PROVIDED OR FOR MANAGEMENT ONLY  
(NOES 1981-1983)

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NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-47

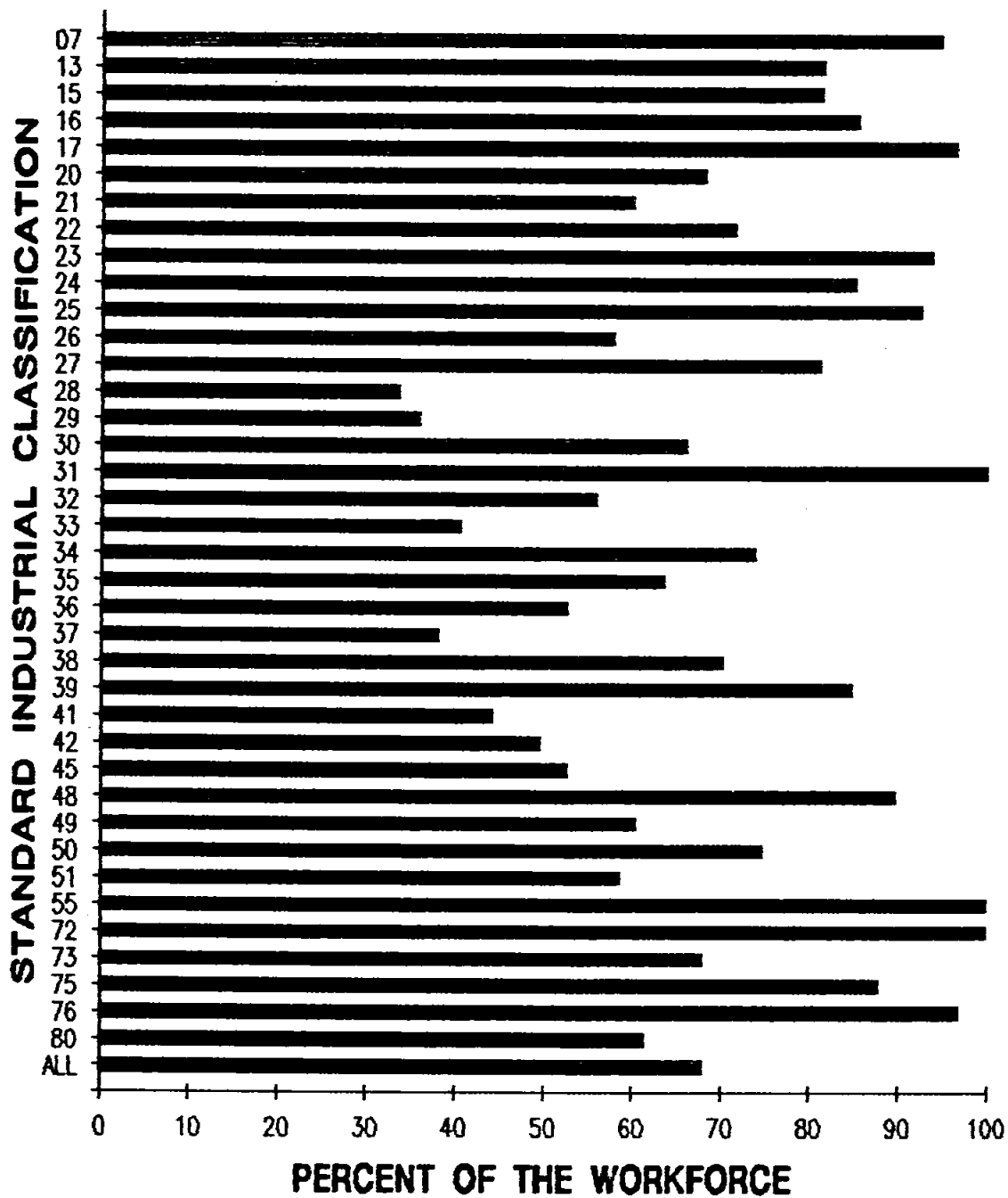
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
PROVIDE NO OPHTHALMOLOGY TESTS OR EXAMINE MANAGEMENT ONLY

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	5419* (1542) 97.4%	70* (67) 100.0%	...	5490* (1529) 97.5%	97924* (29580) 94.4%	7009* (6680) 100.0%	...	104934* (29294) 94.8%
13	8141 (1876) 94.7%	832* (305) 81.6%	...	8972 (2027) 92.9%	193103 (40048) 92.4%	144737* (56603) 83.2%	...	337839 (82041) 81.5%
15-17	91579 (2431) 97.1%	3408 (500) 82.2%	138* (71) 56.9%	95126 (2545) 96.4%	2024054 (28014) 96.4%	619336 (104802) 84.0%	122943* (56871) 52.1%	2766333 (120385) 90.0%
20-39	142184 (2713) 92.8%	25631 (1734) 80.7%	2999 (211) 47.8%	170813 (3598) 89.3%	4194818 (66019) 90.9%	5082198 (318849) 79.6%	3020734 (245390) 36.5%	12297751 (447473) 63.8%
40-49	37770 (2539) 71.1%	3903 (886) 66.8%	236* (87) 50.4%	41909 (2832) 70.5%	1022781 (93798) 71.3%	738737* (191071) 64.1%	230983* (83762) 40.3%	1992500 (228416) 63.0%
50-59	49425 (3733) 84.6%	1908* (576) 71.8%	...	51334 (3856) 84.1%	929328 (80030) 82.7%	287109* (89018) 70.2%	...	1216436 (125847) 79.3%
70-79	69057 (4078) 94.4%	1949 (331) 83.1%	182* (80) 51.5%	71188 (4038) 93.9%	1293953 (80225) 92.9%	356391 (61839) 76.7%	138687* (58219) 40.8%	1789031 (106776) 81.4%
80	2785* (821) 98.1%	1637 (276) 75.6%	1224 (217) 59.4%	5646 (762) 79.9%	98981 (22220) 97.4%	388649 (68662) 72.7%	1767829 (284000) 58.5%	2255460 (288192) 61.6%
ALL	406361 (7540) 90.5%	39339 (2158) 78.7%	4779 (333) 50.6%	450478 (8103) 88.6%	9854941 (172496) 88.9%	7624166 (410935) 77.3%	5281176 (393080) 42.4%	22760283 (620307) 68.1%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
...No facilities observed.



**FIGURE III - 54**  
**OPHTHALMOLOGY TESTS NOT PROVIDED OR FOR MANAGEMENT ONLY**  
**(NOES 1981-1983)**



NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
PROVIDE NO OPHTHALMOLOGY TESTS OR EXAMINE MANAGEMENT ONLY

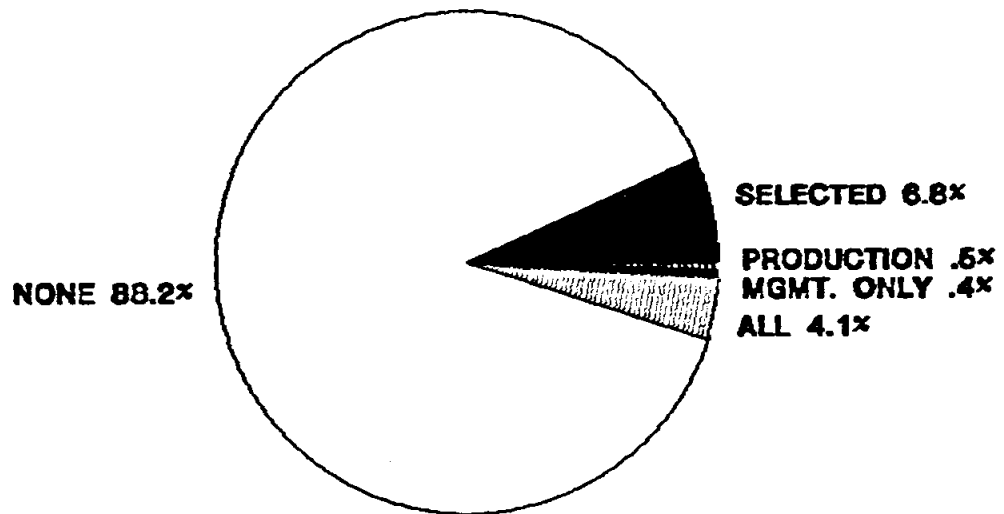
SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	5419* (1542) 97.4%	70* (67) 100.0%	...	5490* (1529) 97.5%	97924* (29580) 94.4%	7009* (6680) 100.0%	...	104934* (29294) 94.8%
13	8141 (1876) 94.7%	832* (305) 81.6%	...	8972 (2027) 92.9%	193103 (40048) 92.4%	144737* (56603) 83.2%	...	337839 (82041) 81.5%
15	24451 (1689) 98.1%	649* (171) 58.6%	68* (30) 50.3%	25168 (1684) 96.2%	551262 (44674) 97.9%	112068* (29559) 56.5%	66331* (30944) 49.2%	729660 (56296) 81.4%
16	10341 (1438) 91.6%	964 (184) 86.1%	70* (59) 65.3%	11375 (1477) 90.9%	259818 (44644) 91.5%	190516 (43501) 91.7%	56612* (43243) 55.9%	506945 (85367) 85.5%
17	56787 (1758) 97.7%	1795 (411) 93.6%	...	58582 (1871) 97.6%	1212975 (39262) 96.9%	316753* (81615) 95.7%	...	1529728 (92531) 96.6%
20	9805 (697) 85.9%	2393 (308) 74.4%	275* (70) 49.3%	12473 (772) 82.1%	325352 (17714) 83.8%	495354 (80165) 73.5%	240573* (60201) 48.9%	1061280 (86177) 68.3%
21	26* (42) 86.5%	...	62* (46) 78.0%	88* (57) 80.3%	1608* (2605) 86.2%	...	66982* (42632) 59.7%	68590* (42237) 60.2%
22	2932 (393) 100.0%	1361 (155) 85.7%	99* (65) 33.1%	4392 (366) 91.1%	106032 (5745) 100.0%	287301 (30701) 82.8%	118459* (78798) 45.4%	511793 (82250) 71.7%
23	12333 (759) 98.6%	3055 (161) 98.5%	216* (89) 89.2%	15603 (771) 98.4%	413917 (8742) 97.7%	595811 (29610) 97.7%	156048* (69876) 74.9%	1165836 (69676) 93.8%
24	10257 (709) 95.8%	935 (143) 81.4%	92* (75) 88.7%	11284 (771) 94.3%	279592 (27245) 92.1%	149757 (25925) 81.6%	64733* (51314) 70.1%	494083 (78047) 85.2%
25	4117 (471) 98.9%	891 (152) 83.9%	119* (75) 99.6%	5126 (493) 95.9%	135761 (19780) 97.6%	221534 (41041) 86.4%	122998* (62394) 100.0%	480292 (76992) 92.6%
26	3838 (790) 93.3%	1172 (212) 74.7%	37* (70) 17.2%	5047 (796) 85.6%	120860 (17899) 87.8%	217162 (45532) 77.2%	24899* (45093) 12.0%	362922 (57996) 58.0%
27	16999 (1091) 93.8%	1698 (194) 90.6%	186* (81) 58.8%	18882 (1062) 93.0%	443847 (14927) 92.8%	328352 (51782) 91.0%	189527* (62376) 54.8%	961727 (96664) 81.2%
28	4542 (402) 73.6%	499* (145) 43.0%	70* (62) 18.4%	5111 (405) 66.3%	117254 (11087) 64.9%	100525* (32436) 38.5%	91133* (96837) 19.1%	308912* (103553) 33.7%
29	914* (376) 90.4%	176* (71) 60.0%	...	1090* (379) 77.6%	37314* (16469) 91.1%	42572* (18214) 67.3%	...	79885* (24028) 36.0%
30	6665 (1142) 99.3%	1249* (484) 81.3%	63* (40) 27.9%	7976 (1345) 94.1%	222650 (27228) 99.0%	239344* (99390) 81.3%	36968* (22192) 15.8%	498963 (115813) 66.2%
31	931* (343) 100.0%	569 (131) 100.0%	25* (24) 100.0%	1525 (372) 100.0%	24888* (7207) 100.0%	135459* (34334) 100.0%	15664* (16901) 100.0%	176011 (38675) 100.0%
32	7760 (1189) 88.2%	466* (120) 46.0%	50* (38) 26.9%	8275 (1175) 82.8%	201728 (15805) 85.1%	93054* (31987) 44.5%	27366* (20954) 21.2%	322148 (36971) 56.0%
33	3638 (531) 88.0%	1096 (213) 74.7%	86* (54) 25.6%	4821 (578) 81.2%	115952 (16889) 83.7%	223561 (48170) 71.9%	96441* (55871) 15.5%	435954 (71079) 40.7%

SIC CODE					EMPLOYEES			
	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	16039 (996) 86.6%	2543 (160) 81.5%	162* (53) 47.0%	18744 (964) 85.2%	486951 (18748) 87.8%	466596 (28362) 78.2%	158581* (54830) 45.2%	1112128 (61182) 74.0%
35	21641 (1086) 95.5%	2722 (188) 80.0%	406 (65) 51.8%	24770 (1094) 92.3%	569427 (15032) 93.8%	550382 (24376) 83.2%	398835 (70164) 35.8%	1518644 (90240) 63.8%
36	7104 (611) 100.0%	2301 (188) 85.7%	348* (113) 44.2%	9753 (589) 92.2%	230488 (11906) 100.0%	452751 (37019) 81.9%	355629 (87225) 30.1%	1038868 (100096) 52.9%
37	3510 (829) 88.3%	1088 (110) 91.4%	158* (50) 37.9%	4755 (809) 85.2%	97407 (18816) 76.7%	209512 (28578) 87.6%	412982* (144153) 27.3%	719900 (139343) 38.3%
38	2634 (517) 98.0%	775 (100) 81.0%	243* (106) 58.5%	3653 (544) 89.9%	100075 (13962) 95.7%	160969 (25331) 82.8%	273544* (114849) 59.4%	534587 (126392) 70.4%
39	6501 (662) 99.2%	642* (1256) 80.4%	302* (226) 89.3%	7444 (1364) 96.8%	163654 (13515) 98.7%	112203* (229987) 75.1%	169372* (127002) 80.9%	445228* (229851) 84.9%
41	2481* (739) 56.1%	181* (124) 35.5%	...	2662* (771) 54.0%	654.3* (2411) 55.6%	22932* (15313) 28.1%	...	88336* (32216) 44.4%
42	10668 (1519) 53.3%	573* (184) 38.6%	44* (36) 53.9%	11285 (1545) 52.3%	25630 (4012) 52.6%	101652* (32030) 39.3%	50920* (44164) 68.0%	408951 (49761) 49.8%
45	2559* (806) 78.9%	590* (397) 99.9%	58* (38) 39.1%	3206* (992) 80.6%	54874 (12236) 70.8%	109332* (75829) 100.0%	74014* (40123) 28.0%	238219* (84878) 52.8%
48	13951 (2124) 94.9%	767 (155) 85.0%	18* (13) 52.4%	14736 (2163) 94.2%	409615 (82753) 96.2%	147980 (35660) 83.9%	46280* (33466) 66.0%	603875 (88691) 89.8%
49	6202 (1400) 75.5%	1365* (486) 73.3%	84* (61) 48.3%	7651 (1605) 74.6%	192212 (43052) 71.4%	275679* (127607) 64.8%	41760* (30428) 28.5%	509650* (154089) 60.6%
50	25042 (2443) 82.5%	1289* (410) 71.5%	...	26331 (2514) 81.9%	495583 (65283) 78.6%	188534* (59852) 66.6%	...	684116 (102796) 74.9%
51	5455 (1249) 59.9%	...	...	5455 (1249) 58.3%	124700* (39628) 67.4%	...	...	124700* (39628) 58.8%
55	18928 (3032) 100.0%	620* (491) 99.9%	...	19548 (3239) 100.0%	309045 (54796) 100.0%	98575* (80174) 100.0%	...	407620* (110347) 100.0%
72	20629 (2414) 100.0%	675* (190) 100.0%	13* (19) 100.0%	21318 (2465) 100.0%	380020 (49376) 100.0%	82220* (24190) 100.0%	10670* (15114) 100.0%	472910 (62008) 100.0%
73	14718 (1743) 88.8%	1091 (222) 73.3%	169* (69) 49.5%	15978 (1659) 86.8%	378986 (39638) 89.9%	241592 (48628) 69.1%	128017* (50410) 38.9%	748595 (66101) 68.1%
75	24259 (3539) 92.7%	59* (60) 99.7%	...	24318 (3546) 92.7%	362510 (53265) 87.7%	8238* (8380) 100.0%	...	370748 (53957) 88.0%
76	9452 (2000) 96.9%	123* (94) 100.0%	...	9575 (2016) 97.0%	172438 (26959) 96.6%	24341* (19716) 100.0%	...	196779 (37093) 97.0%
80	2785* (821) 98.1%	1637 (276) 75.6%	1224 (217) 59.4%	5646 (762) 79.9%	98981 (22220) 97.4%	388649 (68662) 72.7%	1767829 (284000) 58.5%	2255460 (288192) 61.6%
A11	404452 (7164) 90.5%	38937 (836) 78.6%	4762 (351) 50.5%	448151 (7373) 88.6%	9810644 (113243) 89.0%	7552093 (126503) 77.3%	5272171 (410796) 42.3%	22634909 (478919) 68.1%

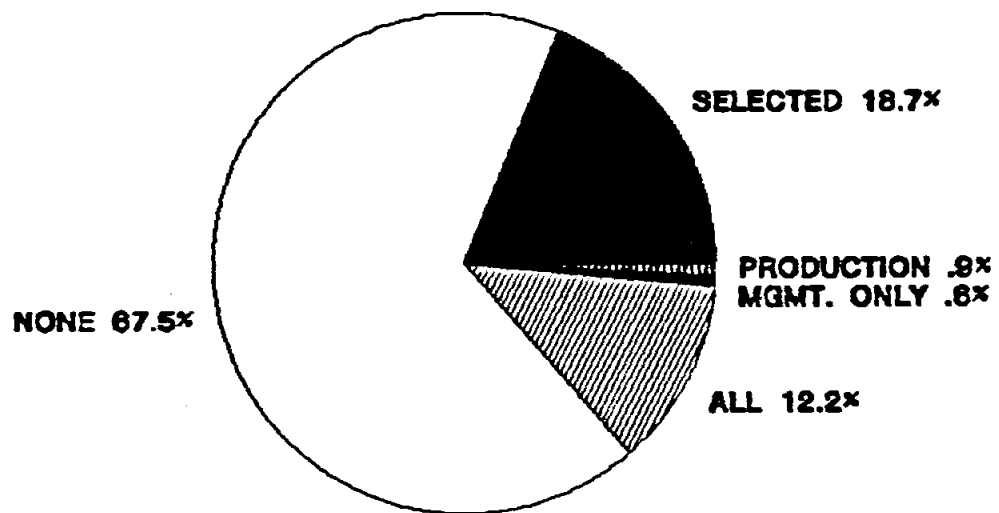
\*Standard error &gt;25% of the estimate. The estimate may be unreliable.

...No facilities observed.

**FIGURE III - 55**  
**PROVISION OF OPHTHALMOLOGY TESTS**  
**(NOES 1981-1983)**



**PLANTS**



**WORKERS**

## Analysis of Audiometric Testing

**This sub-item was displayed on the questionnaire as:**

**(Note: Response categories are as shown in the display of question 22)**

- (1) Response 2, 4, or 5 - Provision of audiometric tests to all, production, or selected workers

**Figure III-56      Audiometric tests provided to all or selected workers  
                              (by major industrial group)**

- (2) Response 1 or 3 - No provision of audiometric tests or testing of management personnel only

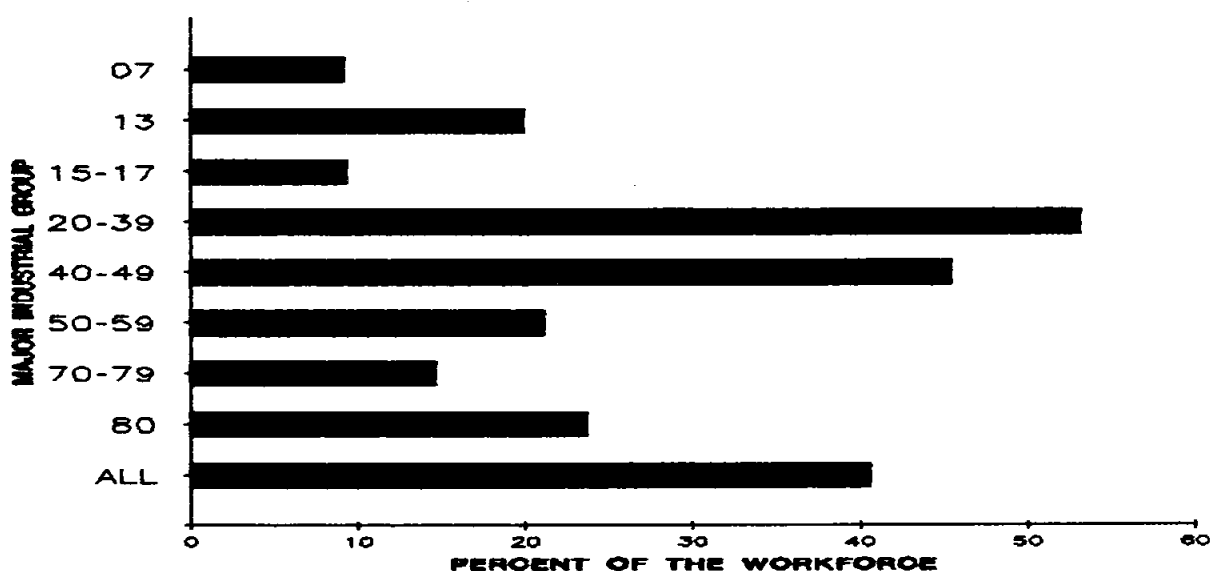
**Figure III-58      Audiometric tests not provided or for management only  
                              (by major industrial group)**

**(3) Response 1, 2, 3, 4, or 5 - Provision of audiometric tests**

**The estimated proportions of plants and workers in those plants corresponding to each of the five possible responses to the audiometric inquiry are presented in Figure III-60.**

**Figure III-60      Provision of audiometric tests**

**FIGURE III - 56**  
**AUDIOMETRIC TESTS PROVIDED TO ALL OR SELECTED WORKERS**  
**(NOES 1981-1985)**



NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-49

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 PROVIDE AUDIOMETRIC TESTS TO ALL OR SELECTED WORKERS

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	151* (191) 2.7%	...	...	151* (191) 2.7%	10241* (12985) 9.9%	...	...	10241* (12985) 9.3%
13	386* (212) 4.5%	219* (113) 21.5%	46* (52) 100.0%	651* (204) 6.7%	15449* (7825) 7.4%	36277* (17980) 20.9%	31383* (35291) 100.0%	83109* (41461) 20.1%
15-17	2499 (579) 2.6%	658* (263) 15.9%	123* (114) 50.8%	3280 (598) 3.3%	79034* (20551) 3.8%	90549* (32676) 12.3%	122805* (85386) 52.0%	292388* (87150) 9.5%
20-39	15794 (1598) 10.3%	12365 (1224) 38.9%	4541 (215) 72.4%	32701 (2274) 17.1%	724029 (59265) 15.7%	2710930 (264641) 42.5%	6824476 (275170) 82.6%	10259435 (464810) 53.3%
40-49	14590 (1808) 27.5%	3290 (788) 56.3%	271* (111) 57.8%	18151 (2189) 30.5%	396172 (58869) 27.6%	645573* (166129) 56.0%	398301 (92022) 69.4%	1440045 (206946) 45.6%
50-59	8207 (1225) 14.1%	838* (335) 31.5%	...	9045 (1262) 14.8%	193977 (31463) 17.3%	132266* (55449) 32.4%	...	326243 (60812) 21.3%
70-79	2799* (1155) 3.8%	338* (114) 14.4%	165* (112) 46.6%	3302* (1170) 4.4%	58500* (24837) 4.2%	92649* (27879) 19.9%	172957* (89997) 50.9%	324106* (89878) 14.8%
80	54* (64) 1.9%	292* (94) 13.5%	512 (123) 24.8%	858 (149) 12.1%	2663* (3148) 2.6%	79126* (28351) 14.8%	787684 (177417) 26.1%	869474 (164756) 23.8%
ALL	44481 (3013) 9.9%	18001 (1528) 36.0%	5658 (319) 59.9%	68139 (3659) 13.4%	1480066 (96160) 13.4%	3787370 (321994) 38.4%	8337606 (363729) 66.9%	13605042 (554327) 40.7%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-50

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
PROVIDE AUDIOMETRIC TESTS TO ALL OR SELECTED WORKERS

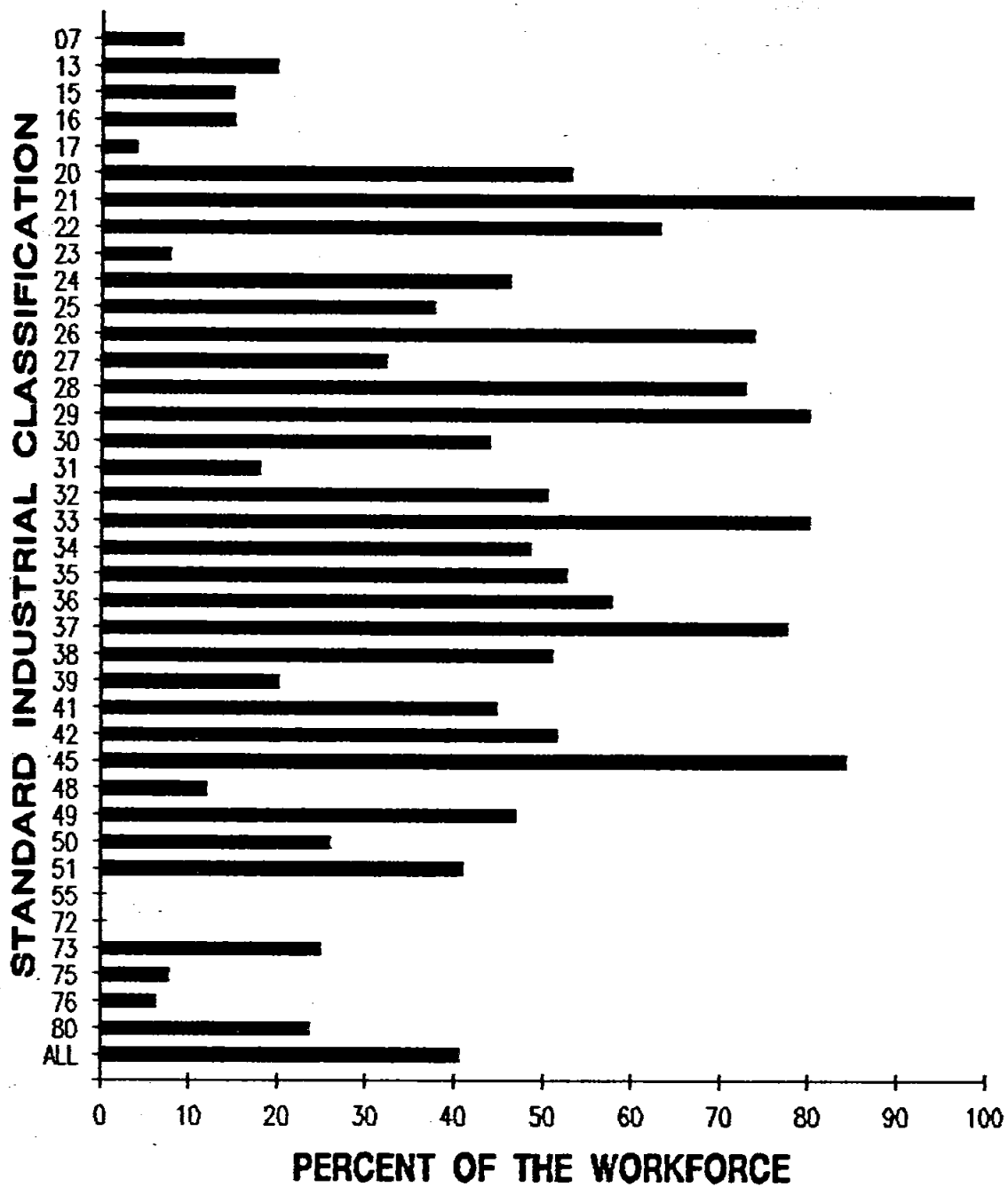
SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	151* (191) 2.7%	...	...	151* (191) 2.7%	10241* (12985) 9.9%	...	...	10241* (12985) 9.3%
13	386* (212) 4.5%	219* (113) 21.5%	46* (52) 100.0%	651* (204) 6.7%	15449* (7825) 7.4%	36277* (17980) 20.9%	31383* (35291) 100.0%	83109* (41461) 20.1%
15	233* (215) .9%	380* (207) 34.3%	67* (96) 49.8%	680* (317) 2.6%	7445* (6875) 1.3%	58936* (27170) 29.7%	68468* (72307) 50.8%	134850* (73052) 15.1%
16	780* (446) 6.9%	155* (122) 13.8%	56* (56) 52.0%	990* (467) 7.9%	18841* (8933) 6.6%	17243* (12690) 8.3%	54337* (45512) 53.7%	90421* (45886) 15.2%
17	1487* (637) 2.6%	123* (106) 6.4%	...	1610* (632) 2.7%	52748* (23311) 4.2%	14369* (12505) 4.3%	...	67117* (25576) 4.2%
20	2170* (600) 19.0%	1549* (403) 48.2%	446* (138) 79.8%	4164 (800) 27.4%	95217* (25145) 24.5%	337671* (97639) 50.1%	395724* (120025) 80.5%	828612 (121732) 53.3%
21	4* (6) 14.6%	...	79* (56) 99.6%	83* (56) 76.2%	258* (345) 13.8%	...	112133* (67572) 100.0%	112391* (67449) 98.6%
22	319* (159) 10.9%	660 (141) 41.6%	281* (76) 93.9%	1260 (204) 26.1%	16511* (7703) 15.6%	184141 (40188) 53.1%	251280* (93559) 96.2%	451932 (99226) 63.3%
23	132* (118) 1.1%	66* (44) 2.1%	58* (43) 24.1%	257* (123) 1.6%	7493* (7159) 1.8%	15721* (10895) 2.6%	76627* (48463) 36.8%	99841* (46700) 8.0%
24	1781* (487) 16.6%	855 (137) 74.4%	19* (8) 18.1%	2655 (474) 22.2%	91991* (26311) 30.3%	141284 (23482) 77.0%	35767* (18789) 38.7%	269042 (39120) 46.4%
25	294* (124) 7.0%	253* (126) 23.8%	119* (75) 99.6%	665* (204) 12.4%	12788* (6823) 9.2%	60279* (30586) 23.5%	122998* (62394) 100.0%	196065* (70909) 37.8%
26	522* (145) 12.7%	1050 (233) 66.9%	214* (73) 100.0%	1787 (312) 30.3%	45331* (12530) 32.9%	211272 (48421) 75.1%	206864* (65220) 100.0%	463467 (88148) 74.0%
27	719* (236) 4.0%	696 (159) 37.2%	186* (90) 58.9%	1601 (215) 7.9%	32798* (11080) 6.9%	131665* (32999) 36.5%	219393* (66319) 63.5%	383857 (81235) 32.4%
28	1632 (390) 26.4%	738 (136) 63.6%	279* (82) 73.4%	2649 (502) 34.3%	69158 (11706) 38.3%	194813 (33461) 74.7%	405426* (112468) 85.1%	669397 (124445) 72.9%
29	...	264* (124) 90.1%	101* (42) 100.0%	365* (143) 26.0%	...	60212* (21521) 95.2%	117545* (70259) 100.0%	177757* (78299) 80.2%
30	885* (325) 13.2%	370* (150) 24.0%	193* (74) 86.0%	1447* (385) 17.1%	40970* (13559) 18.2%	74879* (28590) 25.4%	216359* (74266) 92.6%	332208 (82377) 44.1%
31	50* (39) 5.3%	101* (58) 17.8%	3* (10) 14.0%	154* (74) 10.1%	2188* (1707) 8.8%	25717* (16186) 19.0%	4015* (11440) 25.6%	31919* (19107) 18.1%
32	1426* (455) 16.2%	487* (123) 48.1%	184* (71) 99.9%	2096 (475) 21.0%	54999 (13250) 23.2%	107640* (32000) 51.5%	128993* (49687) 100.0%	291632 (51815) 50.7%
33	915* (262) 22.1%	967 (204) 65.9%	300 (59) 89.2%	2183 (341) 36.7%	52007 (12765) 37.6%	225579 (36919) 72.5%	582201 (80279) 93.7%	859786 (83842) 80.3%



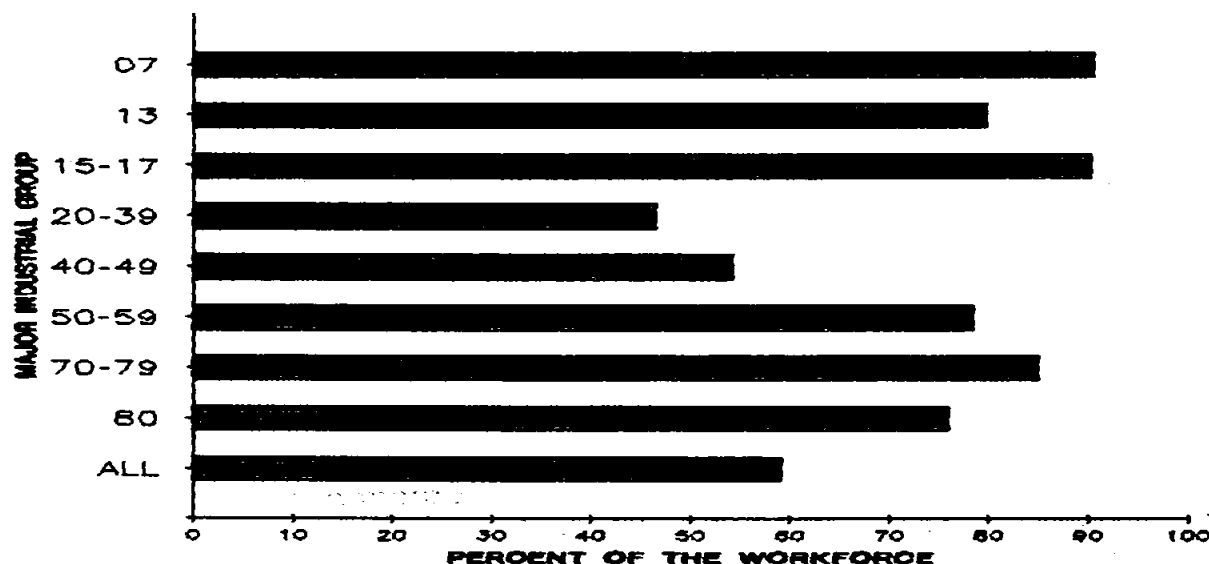
SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	2904 (613) 15.7%	1546 (187) 49.5%	275* (85) 79.4%	4725 (650) 21.5%	105334 (17272) 19.0%	326174 (38970) 54.7%	300979* (102080) 85.7%	732487 (108605) 48.7%
35	1229* (390) 5.4%	1232 (257) 36.2%	625 (74) 79.8%	3086 (499) 11.5%	43730* (12359) 7.2%	243152 (50865) 36.8%	972023 (134031) 87.3%	1258905 (140120) 52.9%
36	301* (131) 4.2%	625 (151) 23.3%	603* (173) 76.6%	1528 (308) 14.4%	26397* (11490) 11.5%	177787 (39053) 32.2%	936686 (203056) 79.2%	1140871 (214703) 58.0%
37	186* (168) 4.7%	269* (99) 22.6%	325 (81) 78.1%	780* (232) 14.0%	10957* (9492) 8.6%	65136* (22542) 27.2%	1386971 (249862) 91.6%	1463064 (244317) 77.8%
38	55* (57) 2.1%	336* (149) 35.1%	242* (94) 58.1%	633* (198) 15.6%	4527* (4673) 4.3%	52379* (24505) 26.9%	333026* (118021) 72.3%	389932* (121176) 51.3%
39	271* (142) 4.1%	303* (639) 38.0%	10* (10) 3.0%	584* (663) 7.6%	11374* (5396) 6.9%	75429* (166049) 50.5%	19466* (18968) 9.3%	106269* (162485) 20.3%
41	785* (351) 17.7%	329* (126) 64.5%	...	1113* (382) 22.6%	30893* (15160) 26.3%	58610* (32330) 71.9%	...	89502* (35049) 44.9%
42	9395 (1377) 46.9%	945* (265) 63.8%	35* (34) 42.2%	10375 (1487) 48.1%	229195 (35233) 47.0%	174656* (50736) 67.5%	21944* (14011) 29.3%	425795 (63484) 51.8%
45	664* (570) 20.5%	534* (387) 90.6%	144* (56) 97.6%	1341* (668) 33.7%	21717* (16770) 28.0%	101262* (74123) 92.6%	258326* (79623) 97.8%	381304* (100403) 84.5%
48	751* (722) 5.1%	307* (209) 34.1%	3* (4) 10.1%	1062* (736) 6.8%	16143* (14712) 3.8%	51877* (32473) 29.4%	13226* (14092) 18.9%	81246* (38415) 12.1%
49	2127* (976) 25.9%	928* (337) 49.8%	89* (74) 51.5%	3144* (1117) 30.7%	78587* (38109) 29.2%	212490* (80331) 49.9%	104805* (55062) 71.5%	395883* (116728) 47.1%
50	4548 (1104) 15.0%	601* (206) 33.4%	...	5149 (1137) 16.0%	133652 (32239) 21.2%	105254* (48424) 37.2%	...	238906* (59760) 26.2%
51	3659 (820) 40.1%	237* (237) 100.0%	...	3896 (896) 41.7%	60325* (15125) 32.6%	27013* (27013) 100.0%	...	87337* (35012) 41.2%
55	...	...	...	...	...	...	...	...
72	...	...	...	...	...	...	...	...
73	1356* (835) 8.2%	302* (117) 20.3%	165* (112) 48.4%	1822* (816) 9.9%	24617* (13207) 5.8%	79977* (26853) 22.9%	172957* (89997) 52.6%	277551* (91581) 25.2%
75	1434* (812) 5.5%	...	...	1434* (812) 5.5%	33400* (18363) 8.1%	...	...	33400* (18363) 7.9%
76	9* (8) .1%	36* (45) 29.4%	...	45* (45) .5%	483* (423) .3%	12672* (15755) 52.1%	...	13156* (15699) 6.5%
80	54* (64) 1.9%	292* (94) 13.5%	512 (123) 24.8%	858 (149) 12.1%	2663* (3148) 2.6%	79126* (28351) 14.8%	787684 (177417) 26.1%	869474 (164756) 23.8%
A11	43611 (3035) 9.8%	17776 (798) 35.9%	5658 (381) 60.0%	67045 (3437) 13.3%	1460428 (99444) 13.2%	3747209 (158159) 38.3%	8337606 (345266) 66.9%	13545243 (421727) 40.7%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE III - 57**  
**AUDIOMETRIC TESTS PROVIDED TO ALL OR SELECTED WORKERS**  
 (NOES 1981-1983)



**FIGURE III - 58**  
**AUDIOMETRIC TESTS NOT PROVIDED OR FOR MANAGEMENT ONLY**  
**(NOES 1981-1983)**



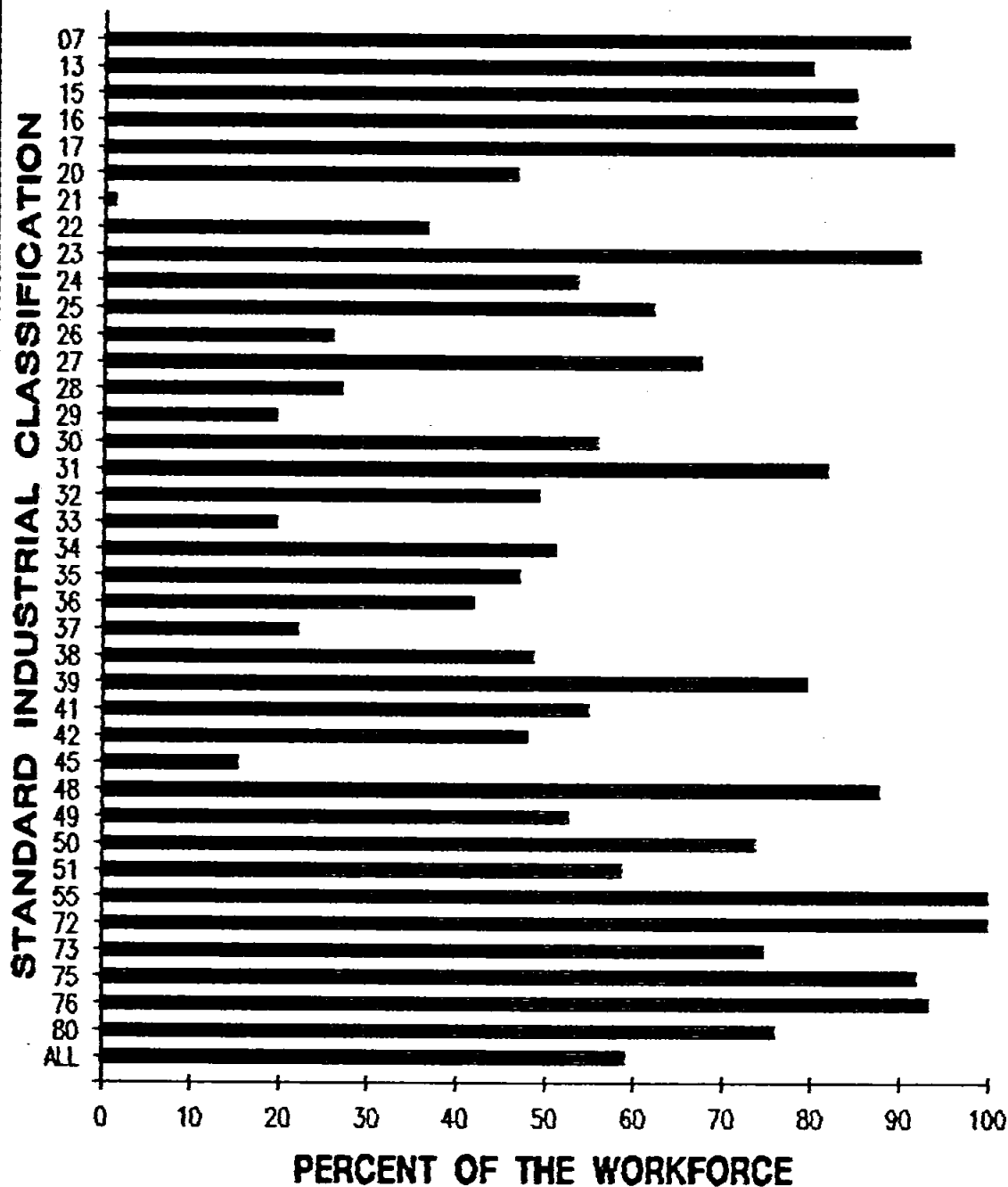
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-51

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 PROVIDE NO AUDIOMETRIC TESTS OR EXAMINE MANAGEMENT ONLY

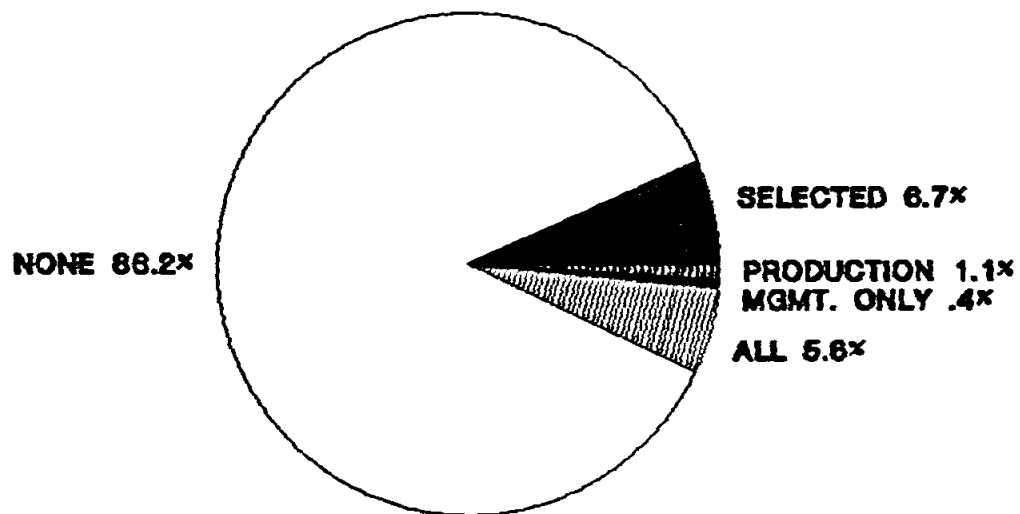
MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	5413* (1516) 97.3%	70* (67) 100.0%	...	5483* (1497) 97.3%	93442* (24956) 90.1%	7009* (6680) 100.0%	...	100451 (23236) 90.7%
13	8211 (1990) 95.5%	800* (322) 78.5%	...	9011 (2154) 93.3%	193509 (42154) 92.6%	137665* (60805) 79.1%	...	331174* (88134) 79.9%
15-17	91833 (2335) 97.4%	3487 (483) 84.1%	119* (62) 49.4%	95439 (2438) 96.7%	2019859 (24714) 96.2%	646551 (98508) 87.7%	113252* (53710) 48.0%	2779661 (120095) 90.5%
20-39	137448 (2752) 89.7%	19389 (1371) 61.1%	1729 (241) 27.6%	158566 (3200) 82.9%	3891666 (62923) 84.3%	3669884 (243964) 57.5%	1440845 (174195) 17.4%	9002394 (318857) 46.7%
40-49	38562 (2456) 72.5%	2554 (458) 43.7%	197* (68) 42.2%	41313 (2528) 69.5%	1037697 (92943) 72.4%	507741 (126029) 44.0%	175443* (54786) 30.6%	1720881 (164411) 54.4%
50-59	50185 (3662) 85.9%	1821* (551) 68.5%	...	52005 (3797) 85.2%	930397 (78639) 82.7%	276560* (85593) 67.6%	...	1206958 (123185) 78.7%
70-79	70335 (3974) 96.2%	2009 (327) 85.6%	189* (80) 53.5%	72533 (3938) 95.6%	1334674 (76363) 95.8%	371863 (56845) 80.1%	166603* (61248) 49.1%	1873140 (108589) 85.2%
80	2785* (821) 98.1%	1874 (284) 86.5%	1549 (261) 75.2%	6208 (778) 87.8%	98981 (22220) 97.4%	455358 (73370) 85.2%	2234992 (315002) 73.9%	2789331 (320004) 76.2%
ALL	404772 (7429) 90.1%	32003 (1709) 64.0%	3784 (376) 40.1%	440558 (7745) 86.6%	9600224 (167682) 86.6%	6072632 (323709) 61.6%	4131134 (373106) 33.1%	19803989 (529905) 59.3%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

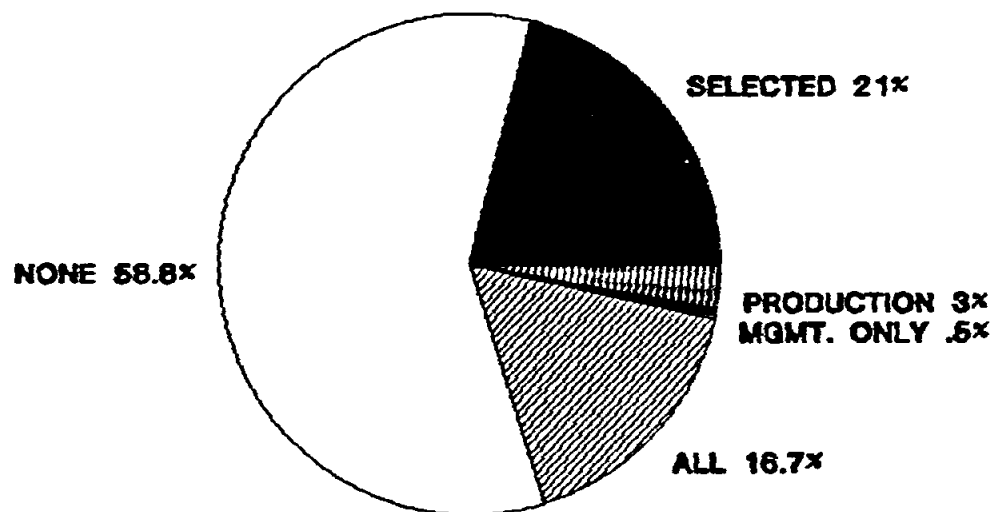
**FIGURE III - 59**  
**AUDIOMETRIC TESTS NOT PROVIDED OR FOR MANAGEMENT ONLY**  
**(NOES 1981-1983)**



**FIGURE III - 60**  
**PROVISION OF AUDIOMETRIC TESTS**  
**(NOES 1981-1983)**



**PLANTS**



**WORKERS**

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
PROVIDE NO AUDIOMETRIC TESTS OR EXAMINE MANAGEMENT ONLY

SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	5413* (1516) 97.3%	70* (67) 100.0%	...	5483* (1497) 97.3%	93442* (24956) 90.1%	7009* (6680) 100.0%	...	100451 (23236) 90.7%
13	8211 (1990) 95.5%	800* (322) 78.5%	...	9011 (2154) 93.3%	193509 (42154) 92.6%	137665* (60805) 79.1%	...	331174* (88134) 79.9%
15	24683 (1751) 99.1%	727 (181) 65.7%	68* (30) 50.3%	25478 (1738) 97.4%	555443 (43492) 98.7%	139282* (36196) 70.3%	66331* (30944) 49.2%	761056 (57719) 84.9%
16	10505 (1404) 93.1%	964 (184) 86.1%	52* (52) 48.2%	11520 (1433) 92.1%	265248 (44250) 93.4%	190516 (43501) 91.7%	46921* (40314) 46.3%	502685 (84256) 84.8%
17	56646 (1729) 97.4%	1795 (411) 93.6%	...	58441 (1867) 97.3%	1199167 (36541) 95.8%	316753* (81615) 95.7%	...	1515920 (98234) 95.8%
20	9242 (873) 81.0%	1667 (301) 51.8%	114* (57) 20.3%	11023 (949) 72.6%	293221 (25882) 75.5%	336109 (76649) 49.9%	96051* (44430) 19.5%	725382 (91549) 46.7%
21	26* (42) 86.5%	...	...	26* (42) 23.8%	1608* (2605) 86.2%	...	...	1608* (2605) 1.4%
22	2613 (361) 89.1%	928 (192) 58.5%	18* (21) 6.0%	3559 (393) 73.9%	89522 (8492) 84.4%	162932 (40168) 46.9%	9813* (11492) 3.8%	262266 (46148) 36.7%
23	12381 (754) 98.9%	3037 (163) 97.9%	184* (75) 76.0%	15602 (762) 98.4%	416411 (7948) 98.2%	594201 (30220) 97.4%	131810* (60544) 63.2%	1142422 (60815) 92.0%
24	8930 (679) 83.4%	293* (137) 25.5%	85* (73) 82.1%	9309 (709) 77.8%	211655 (21427) 69.7%	42301* (19091) 23.0%	56588* (48232) 61.3%	310544 (62431) 53.6%
25	3871 (475) 93.0%	809 (173) 76.2%	...	4680 (471) 87.6%	126321 (18428) 90.8%	196163 (44856) 76.5%	...	322484 (51616) 62.2%
26	3590 (172) 87.3%	518* (135) 33.0%	...	4109 (754) 69.7%	92323 (16474) 67.1%	70204* (17898) 24.9%	...	162527 (20292) 26.0%
27	17399 (1024) 96.0%	1177 (199) 62.8%	130* (64) 41.3%	18706 (1001) 92.1%	445333 (15829) 93.1%	229237 (50965) 63.5%	126357* (56136) 36.5%	800927 (84617) 67.6%
28	4541 (451) 73.6%	423* (137) 36.4%	101* (57) 26.6%	5064 (490) 65.7%	111581 (11646) 61.7%	66018* (24347) 25.3%	70915* (38510) 14.9%	248514 (47795) 27.1%
29	1011* (404) 100.0%	29* (25) 10.0%	...	1040* (408) 74.0%	40980* (17325) 100.0%	3043* (2634) 4.8%	...	44023* (17774) 19.8%
30	5826 (1079) 86.8%	1168* (384) 76.0%	31* (45) 13.9%	7025 (1181) 82.9%	184035 (25331) 81.8%	219650* (87051) 74.6%	17288* (24821) 7.4%	420973 (94111) 55.9%
31	881* (347) 94.6%	468* (117) 82.2%	22* (20) 87.3%	1371* (360) 89.9%	22700* (7206) 91.2%	109742* (31563) 81.0%	11650* (10428) 74.4%	144092 (35466) 81.9%
32	7372 (1165) 83.8%	526 (110) 51.9%	...	7898 (1197) 79.0%	182161 (17097) 76.8%	101344* (28716) 48.5%	...	283505 (37133) 49.3%
33	3219 (533) 77.9%	501* (172) 34.1%	37* (48) 10.8%	3757 (579) 63.3%	86461 (17072) 62.4%	85502* (28584) 27.5%	39298* (41899) 6.3%	211262 (41434) 19.7%

SIC CODE					EMPLOYEES			
	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	15617 (987) 84.3%	1576 (239) 50.5%	71* (40) 20.5%	17263 (985) 78.5%	449551 (18552) 81.0%	270511 (38579) 45.3%	50077* (32415) 14.3%	770138 (55634) 51.3%
35	21421 (1198) 94.6%	2174 (253) 63.8%	158* (47) 20.2%	23753 (1203) 88.5%	563070 (17098) 92.8%	417969 (50863) 63.2%	140910* (41881) 12.7%	1121949 (75400) 47.1%
36	6803 (648) 95.8%	2060 (165) 76.7%	185* (67) 23.5%	9049 (658) 85.6%	204091 (14364) 88.5%	374874 (39038) 67.8%	245776* (73899) 20.8%	824741 (86257) 42.0%
37	3787 (857) 95.3%	921 (144) 77.4%	91* (43) 21.8%	4799 (825) 86.0%	116065 (17954) 91.4%	174048 (31217) 72.8%	127037* (49890) 8.4%	417151 (59777) 22.2%
38	2634 (517) 98.0%	621 (115) 64.9%	174* (105) 41.8%	3429 (528) 84.4%	100075 (13962) 95.7%	142014 (29820) 73.1%	127372* (84785) 27.7%	369460 (85830) 48.7%
39	6283 (670) 95.9%	494* (890) 62.0%	328* (217) 97.0%	7105 (1118) 92.4%	154503 (14968) 93.1%	74020* (121369) 49.5%	189904* (119941) 90.7%	418426* (154459) 79.7%
41	3635* (984) 82.2%	181* (124) 35.5%	...	3816* (1023) 77.4%	86740* (27056) 73.7%	22932* (15313) 28.1%	...	109672* (35603) 55.1%
42	10632 (1561) 53.1%	537* (191) 36.2%	47* (36) 51.3%	11216 (1621) 51.9%	258608 (43284) 53.0%	84166* (23731) 32.5%	52886* (44449) 70.7%	395660 (59748) 48.2%
45	2578* (816) 79.5%	55* (46) 9.4%	4* (4) 2.7%	2637* (813) 66.3%	55780 (13496) 72.0%	8070* (6702) 7.4%	5930* (5673) 2.2%	69780 (16826) 15.5%
48	13951 (2124) 94.9%	594* (203) 65.9%	30* (20) 88.9%	14575 (2174) 93.2%	409615 (82753) 96.2%	124444* (40374) 70.6%	56857* (37465) 81.1%	590917 (96293) 87.9%
49	6089 (1366) 74.1%	935* (410) 50.2%	84* (61) 48.3%	7107 (1530) 69.3%	190783 (43018) 70.8%	212980* (121349) 50.1%	41760* (30428) 28.5%	445522* (145207) 52.9%
50	25801 (2407) 85.0%	1201* (385) 66.6%	...	27002 (2460) 84.0%	496652 (58287) 78.8%	177985* (56118) 62.8%	...	674638 (92074) 73.8%
51	5455 (1249) 59.9%	...	...	5455 (1249) 58.3%	124700* (39628) 67.4%	...	...	124700* (39628) 58.8%
55	18928 (3032) 100.0%	620* (491) 99.9%	...	19548 (3239) 100.0%	309045 (54796) 100.0%	98575* (80174) 100.0%	...	407620* (110347) 100.0%
72	20629 (2414) 100.0%	675* (190) 100.0%	13* (19) 100.0%	21318 (2465) 100.0%	380020 (49376) 100.0%	82220* (24190) 100.0%	10670* (15114) 100.0%	472910 (62008) 100.0%
73	15219 (1796) 91.8%	1187 (230) 79.7%	176* (70) 51.6%	16582 (1693) 90.1%	396830 (41469) 94.2%	269736 (48099) 77.1%	155933* (53534) 47.4%	822499 (79282) 74.8%
75	24745 (3788) 94.5%	59* (60) 99.7%	...	24804 (3793) 94.5%	379876 (59099) 91.9%	8238* (8380) 100.0%	...	388114 (59579) 92.1%
76	9742 (2197) 99.9%	87* (78) 70.8%	...	9829 (2202) 99.5%	177949 (29886) 99.7%	11669* (10488) 47.9%	...	189617 (32911) 93.5%
80	2785* (821) 98.1%	1874 (284) 86.5%	1549 (261) 75.2%	6208 (778) 87.8%	98981 (22220) 97.4%	455358 (73370) 85.2%	2234992 (315002) 73.5%	2789331 (320004) 76.2%
A11	403094 (7428) 90.2%	31777 (809) 64.1%	3768 (282) 40.0%	438639 (7622) 86.7%	9564053 (122331) 86.8%	6026572 (133866) 61.7%	4122129 (349821) 33.1%	19712753 (408266) 59.3%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

### Analysis of Blood Testing

(see text on questionnaire item 22 for definitions and notes)

This sub-item was displayed on the questionnaire as:

Blood tests	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
-------------	----------	----------	----------	----------	----------

(Note: Response categories are as shown in the display of question 22)

Three analyses of the responses to the blood testing sub-item are presented.

- (1) Response 2, 4, or 5 - Provision of blood tests to all, production, or selected workers

The estimates of the plants which provide blood tests to all workers, production workers, or selected workers, and the workers in those plants (by number and proportion of the totals) are displayed in Figures III-61 and III-62, and Tables III-53 and III-54.

Figure III-61	Blood tests provided to all or selected workers (by major industrial group)
Figure III-62	Blood tests provided to all or selected workers (by 2-digit SIC)
Table III-53	Number and percent of plants and employees in plants which provide blood tests to all or selected workers (by major industrial group)
Table III-54	Number and percent of plants and employees in plants which provide blood tests to all or selected workers (by 2-digit SIC)

- (2) Response 1 or 3 - No provision of blood tests or testing of management personnel only

The estimates of the plants which either do not provide blood tests, or provide them only to management personnel, and workers in those plants (by number and proportion of the totals) are displayed in Figures III-63 and III-64, and Tables III-55 and III-56.

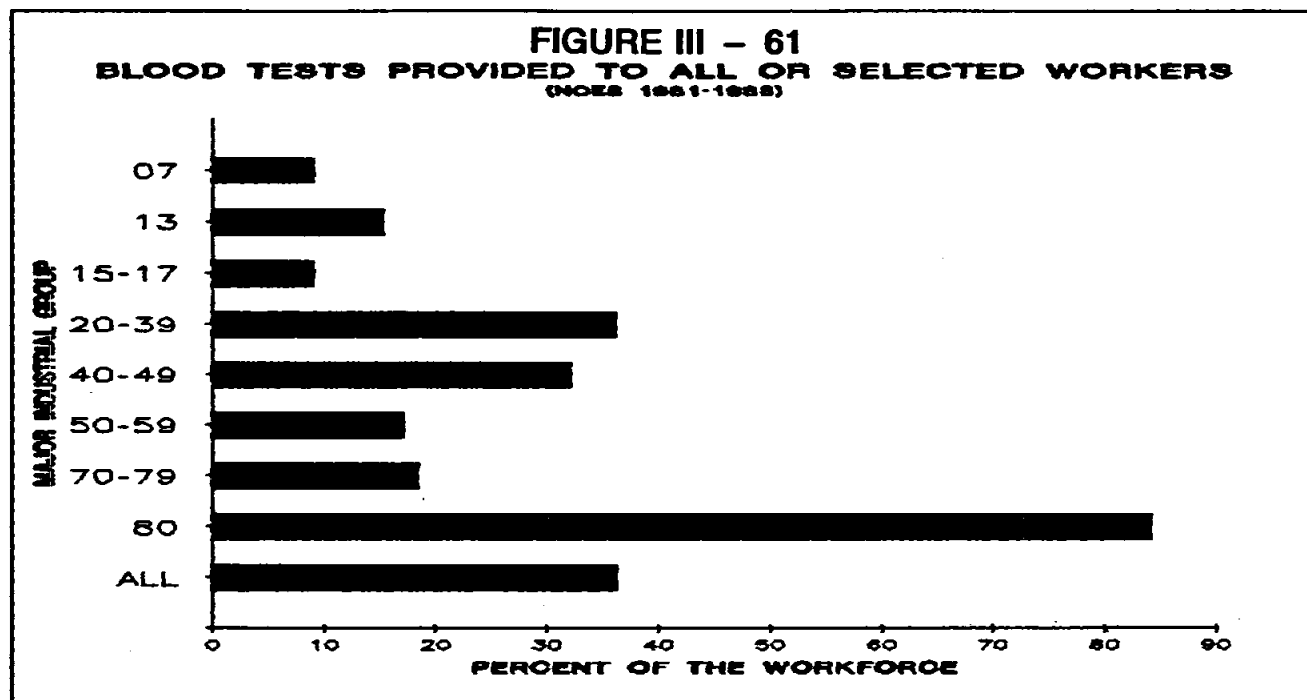
Figure III-63	Blood tests not provided or for management only (by major industrial group)
Figure III-64	Blood tests not provided or for management only (by 2-digit SIC)
Table III-55	Number and percent of plants and employees in plants which provide no blood tests or examine management only (by major industrial group)
Table III-56	Number and percent of plants and employees in plants which provide no blood tests or examine management only (by 2-digit SIC)



**(3) Response 1, 2, 3, 4, or 5 - Provision of blood testing**

**The estimated proportions of plants and workers in those plants corresponding to each of the five possible responses to the blood test inquiry are presented in Figure III-65.**

**Figure III-65      Provision of blood tests**



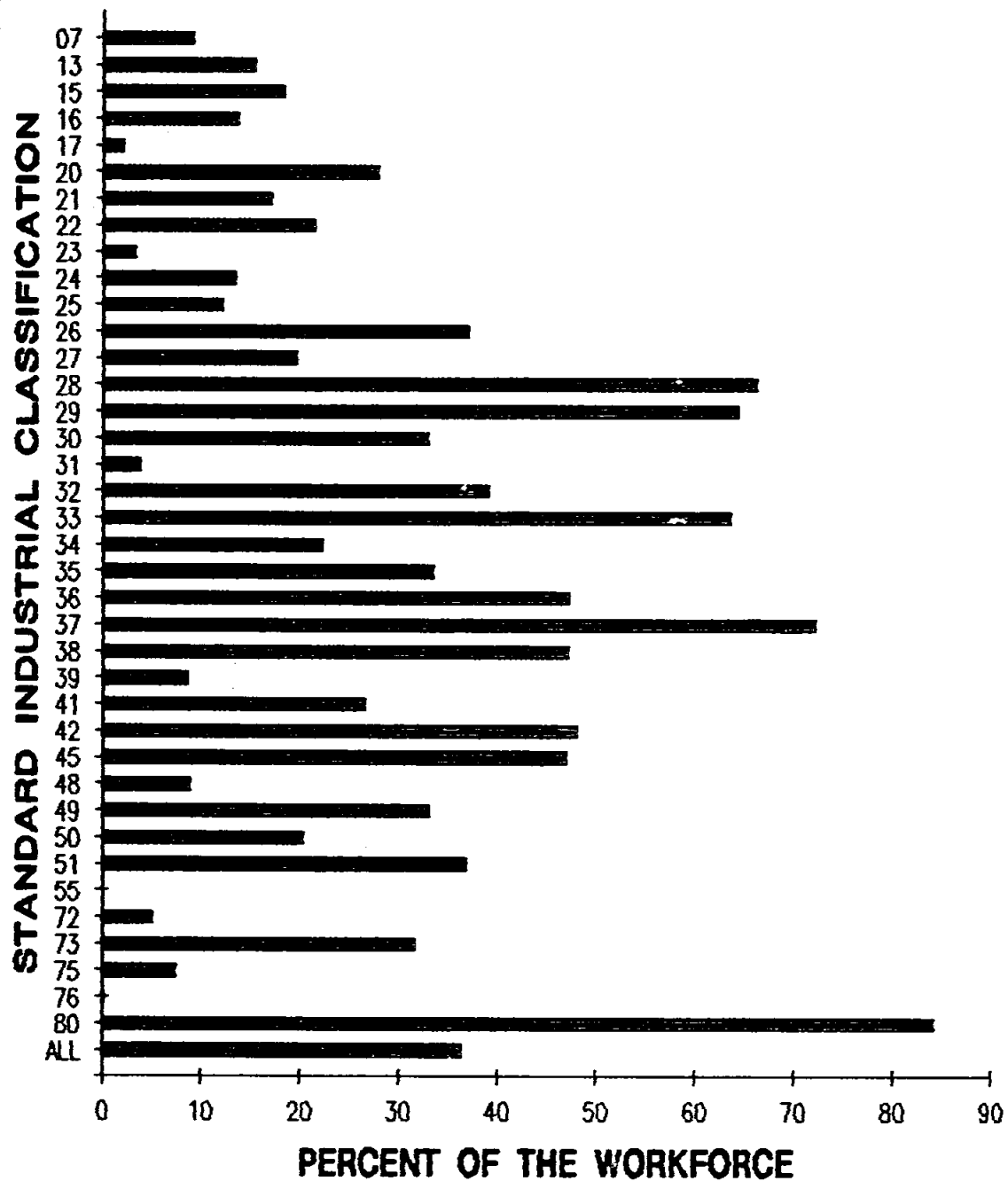
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-53

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH PROVIDE BLOOD TESTS TO ALL OR SELECTED WORKERS

MAJOR GROUP	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	306* (220) 5.5%	...	...	306* (220) 5.4%	10305* (7375) 9.9%	...	...	10305* (7375) 9.3%
13	269* (159) 3.1%	131* (99) 12.9%	46* (52) 100.0%	447* (167) 4.6%	13234* (7284) 6.3%	19431* (14421) 11.2%	31383* (35291) 100.0%	64047* (42104) 15.5%
15-17	2372* (606) 2.5%	677* (235) 16.3%	118* (112) 48.7%	3167 (666) 3.2%	58242* (15369) 2.8%	113155* (37457) 15.4%	114159* (80672) 48.4%	285555* (85485) 9.3%
20-39	11407 (1600) 7.4%	5730 (577) 18.0%	3142 (233) 50.1%	20279 (1722) 10.6%	411905 (49556) 8.9%	1234917 (139472) 19.4%	5369266 (315052) 65.0%	7016089 (385410) 36.4%
40-49	11638 (1559) 21.9%	1707 (375) 29.2%	182* (53) 38.8%	13526 (1706) 22.7%	352371 (53913) 24.6%	375830 (88641) 32.6%	294111* (84214) 51.3%	1022312 (146323) 32.3%
50-59	7491 (1270) 12.8%	569* (302) 21.4%	...	8060 (1255) 13.2%	168422 (25430) 15.0%	97300* (52795) 23.8%	...	265722 (56749) 17.3%
70-79	4449* (1542) 6.1%	366* (127) 15.6%	177* (109) 50.0%	4992* (1473) 6.6%	109088* (32341) 7.8%	95448* (25576) 20.5%	203994* (100787) 60.1%	408530 (99310) 18.6%
80	1885* (645) 66.4%	1551 (207) 71.6%	1788 (245) 86.8%	5225 (677) 73.9%	65201* (17298) 64.1%	396674 (61244) 74.2%	2627894 (306103) 86.9%	3089768 (291838) 84.4%
ALL	39818 (3137) 8.9%	10731 (829) 21.5%	5453 (380) 57.8%	56001 (3256) 11.0%	1188767 (87738) 10.7%	2332755 (190034) 23.7%	8640807 (466862) 69.3%	12162329 (526629) 36.4%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
...No facilities observed.

**FIGURE III - 62**  
**BLOOD TESTS PROVIDED TO ALL OR SELECTED WORKERS**  
 (NOES 1981-1993)



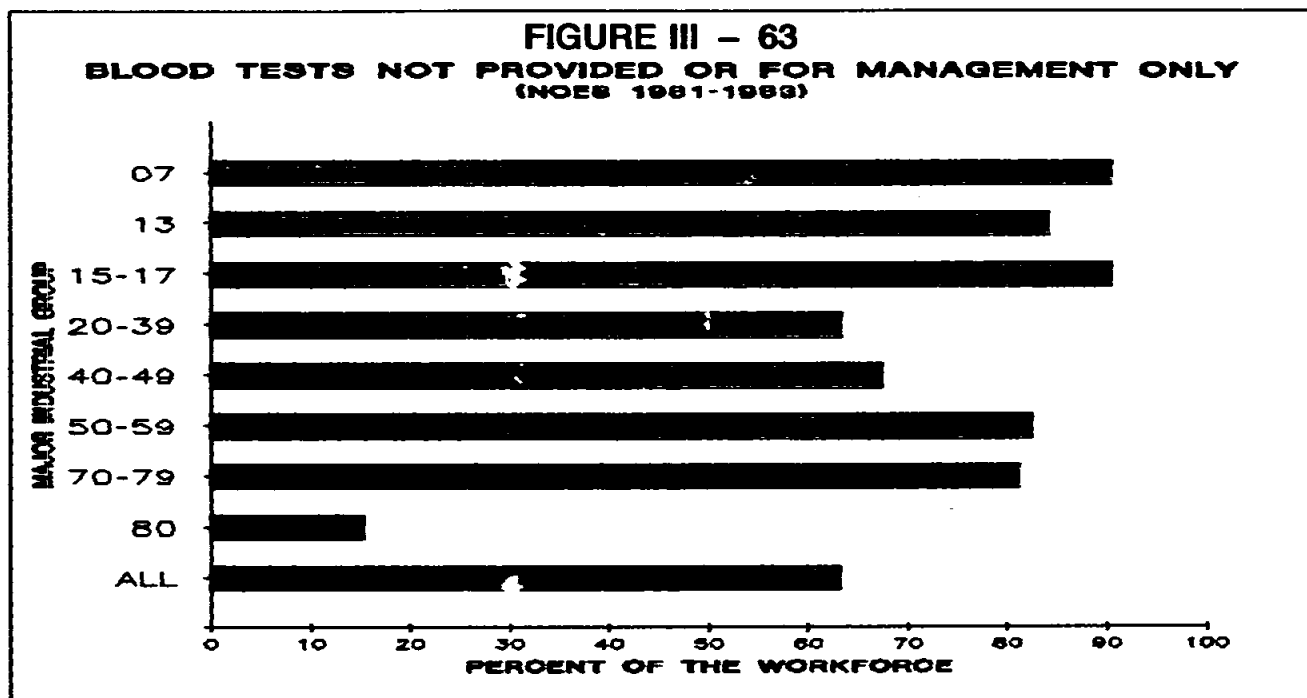
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-54

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
PROVIDE BLOOD TESTS TO ALL OR SELECTED WORKERS

SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	306* (220) 5.5%	...	...	306* (220) 5.4%	10305* (7375) 9.9%	...	...	10305* (7375) 9.3%
13	269* (159) 3.1%	131* (99) 12.9%	46* (52) 100.0%	447* (167) 4.6%	13234* (7284) 6.3%	19431* (14421) 11.2%	31383* (35291) 100.0%	64047* (42104) 15.5%
15	564* (396) 2.3%	451* (205) 40.7%	67* (93) 49.8%	1082* (453) 4.1%	10427* (7521) 1.9%	83811* (33788) 42.3%	72404* (63356) 53.7%	166641* (68940) 18.6%
16	1083* (476) 9.6%	103* (73) 9.2%	51* (56) 47.4%	1236* (499) 9.9%	25781* (10182) 9.1%	14975* (10754) 7.2%	41755* (44854) 41.2%	82511* (46447) 13.9%
17	725* (431) 1.2%	123* (106) 6.4%	...	848* (430) 1.4%	22034* (11625) 1.8%	14369* (12505) 4.3%	...	36403* (15970) 2.3%
20	1608 (398) 14.1%	868* (320) 27.0%	184* (70) 32.8%	2659 (535) 17.5%	66238* (16935) 17.1%	195830* (88594) 29.1%	174888* (72960) 35.6%	436957* (116188) 28.1%
21	4* (6) 14.6%	...	14* (28) 17.5%	18* (25) 16.7%	258* (345) 13.8%	...	19407* (32122) 17.3%	19665* (31898) 17.3%
22	...	181* (74) 11.4%	152* (72) 50.9%	334* (131) 6.9%	...	51422* (20000) 14.8%	103303* (48844) 39.6%	154725* (59748) 21.7%
23	33* (60) .3%	33* (35) 1.1%	11* (8) 4.7%	77* (71) .5%	2907* (5352) .7%	9429* (9805) 1.5%	29565* (21706) 14.2%	41902* (18113) 3.4%
24	358* (229) 3.3%	204* (121) 17.7%	12* (10) 11.5%	574* (270) 4.8%	19435* (13438) 6.4%	31687* (19271) 17.3%	27621* (22969) 29.9%	78743* (32433) 13.6%
25	124* (123) 3.0%	183* (94) 17.2%	3* (4) 2.7%	310* (163) 5.8%	3596* (3575) 2.6%	39035* (19041) 15.2%	20917* (22806) 17.0%	63548* (32894) 12.3%
26	242* (155) 5.9%	272* (115) 17.3%	164* (63) 76.5%	678* (202) 11.5%	13983* (10447) 10.2%	44670* (17155) 15.9%	174487* (60762) 84.3%	233140* (61870) 37.2%
27	1270* (437) 7.0%	140* (63) 7.5%	155* (66) 49.0%	1565* (450) 7.7%	35500* (10295) 7.4%	23333* (12001) 6.5%	175270* (54752) 50.7%	234103 (56500) 19.8%
28	1636 (362) 26.5%	763 (141) 65.8%	239* (85) 62.8%	2637 (431) 34.2%	61792 (9522) 34.2%	202987 (35562) 77.8%	344827* (99891) 72.4%	609606 (110577) 66.4%
29	...	144* (122) 49.1%	101* (42) 100.0%	245* (138) 17.4%	...	25434* (16164) 40.2%	117545* (70259) 100.0%	142979* (76260) 64.5%
30	270* (125) 4.0%	253* (118) 16.5%	151* (66) 67.6%	674* (182) 8.0%	14749* (6900) 6.6%	50548* (24979) 17.2%	183765* (75304) 78.7%	249062* (83877) 33.1%
31	...	33* (25) 5.8%	...	33* (25) 2.2%	...	7017* (5375) 5.2%	...	7017* (5375) 4.0%
32	1009* (392) 11.5%	332* (115) 32.9%	174* (72) 94.6%	1515* (409) 15.2%	33070* (9596) 13.9%	74339* (30798) 35.6%	118336* (49307) 91.7%	225745 (53086) 39.3%
33	767* (268) 18.6%	493* (167) 33.6%	260 (59) 77.2%	1520* (387) 25.6%	39043* (13661) 28.2%	104936* (31867) 33.7%	538729 (96559) 86.7%	682708 (110984) 63.7%

SIC CODE					EMPLOYEES			
	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	2410* (690) 13.0%	452* (138) 14.5%	199* (63) 57.4%	3061 (707) 13.9%	57699* (16143) 10.4%	85237* (27321) 14.3%	194966* (91134) 55.5%	337902* (97935) 22.5%
35	472* (207) 2.1%	735* (210) 21.6%	279 (69) 35.6%	1486 (356) 5.5%	16404* (6238) 2.7%	152857 (36601) 23.1%	630874 (117961) 56.7%	800135 (121847) 33.6%
36	377* (340) 5.3%	365* (132) 13.6%	454 (110) 57.7%	1196* (391) 11.3%	6285* (5098) 2.7%	77964* (31420) 14.1%	848838 (184191) 71.8%	933087 (197447) 47.5%
37	429* (268) 10.8%	70* (45) 5.9%	318* (91) 76.4%	817* (291) 14.6%	27695* (17476) 21.8%	19198* (13329) 8.0%	1312587 (217998) 86.7%	1359480 (216180) 72.3%
38	55* (57) 2.1%	118* (61) 12.3%	262* (93) 63.1%	435* (127) 10.7%	4527* (4673) 4.3%	20764* (12272) 10.7%	333874* (101626) 72.5%	359166* (103344) 47.3%
39	343* (219) 5.2%	92* (183) 11.5%	10* (10) 3.0%	444* (271) 5.8%	8723* (5921) 5.3%	18231* (32526) 12.2%	19466* (18968) 9.3%	46420* (35972) 8.8%
41	910* (383) 20.6%	140* (127) 27.5%	...	1051* (400) 21.3%	21552* (9587) 18.3%	31697* (34041) 38.9%	...	53249* (35175) 26.7%
42	8107 (1090) 40.5%	780* (243) 52.6%	35* (34) 42.2%	8921 (1132) 41.3%	231630 (33327) 47.5%	142694* (48571) 55.1%	21944* (14011) 29.3%	396268 (57521) 48.2%
45	683* (551) 21.1%	...	90* (36) 61.2%	773* (552) 19.4%	22623* (15924) 29.2%	...	190241* (82889) 72.0%	212864* (84963) 47.2%
48	126* (111) .9%	88* (81) 9.7%	19* (16) 56.8%	233* (154) 1.5%	4784* (4209) 1.1%	18455* (17704) 10.5%	37029* (29526) 52.8%	60268* (45269) 9.0%
49	1175* (640) 14.3%	671* (242) 36.0%	38* (33) 21.8%	1883* (732) 18.4%	60270* (33635) 22.4%	175354* (67637) 41.2%	44896* (40405) 30.6%	280520* (96473) 33.3%
50	4582 (1128) 15.1%	332* (201) 18.4%	...	4914 (1107) 15.3%	116787 (27345) 18.5%	70288* (48460) 24.8%	...	187075* (56731) 20.5%
51	2909* (824) 31.9%	237* (237) 100.0%	...	3146* (911) 33.6%	51634* (15007) 27.9%	27013* (27013) 100.0%	...	78647* (35369) 37.1%
55	...	...	...	...	...	...	...	...
72	965* (686) 4.7%	42* (43) 6.3%	...	1007* (676) 4.7%	19324* (14128) 5.1%	5510* (5565) 6.7%	...	24834* (13926) 5.3%
73	1833* (944) 11.1%	323* (111) 21.7%	177* (109) 51.9%	2334* (926) 12.7%	57379* (26353) 13.6%	89938* (24855) 25.7%	203994* (100787) 62.0%	351311* (104495) 31.9%
75	1642* (881) 6.3%	...	...	1642* (881) 6.3%	31901* (17972) 7.7%	...	...	31901* (17972) 7.6%
76	9* (8) .1%	...	...	9* (8) .1%	483* (423) .3%	...	...	483* (423) .2%
80	1885* (645) 66.4%	1551 (207) 71.6%	1788 (245) 86.8%	5225 (677) 73.9%	65201* (17298) 64.1%	396674 (61244) 74.2%	2627894 (306103) 86.9%	3089768 (291838) 84.4%
A11	39180 (3578) 8.8%	10703 (679) 21.6%	5453 (397) 57.9%	55337 (3709) 10.9%	1177255 (90781) 10.7%	2325124 (147223) 23.8%	8640807 (450951) 69.3%	12143186 (453553) 36.5%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.



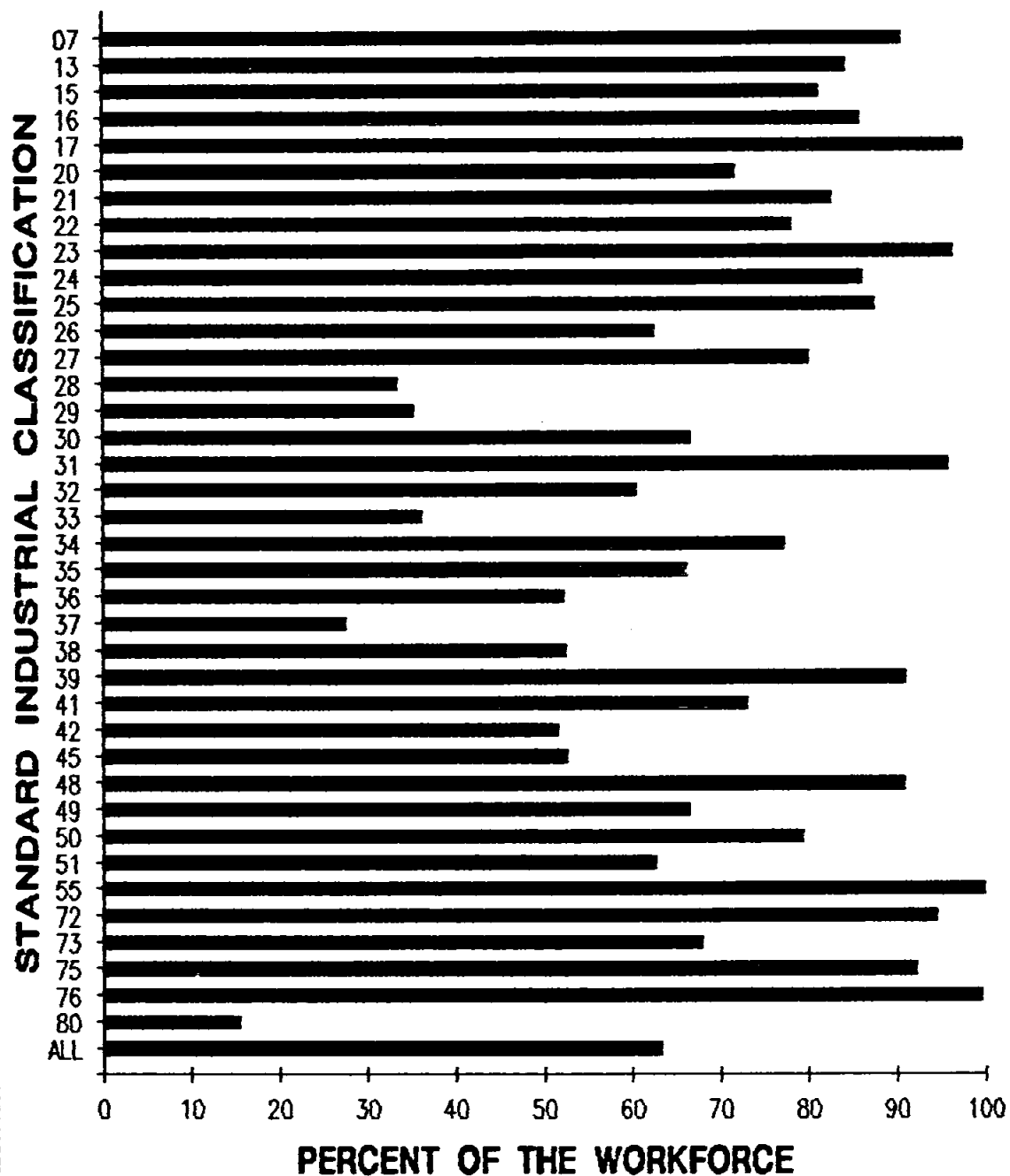
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-55

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
PROVIDE NO BLOOD TESTS OR EXAMINE MANAGEMENT ONLY

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	5257* (1522) 94.5%	70* (67) 100.0%	...	5327* (1509) 94.6%	93378* (28886) 90.1%	7009* (6680) 100.0%	...	100387* (28672) 90.7%
13	8328 (1950) 96.9%	888* (315) 87.1%	...	9215 (2091) 95.4%	195724 (41324) 93.7%	154512* (58233) 88.8%	...	350236 (83801) 84.5%
15-17	91960 (2457) 97.5%	3468 (469) 83.7%	124* (62) 51.4%	95553 (2509) 96.8%	2040651 (24541) 97.2%	623944 (101544) 84.6%	121898* (51199) 51.6%	2786494 (99884) 90.7%
20-39	141836 (3073) 92.6%	26024 (1767) 82.0%	3128 (238) 49.9%	170987 (4014) 89.4%	4203789 (69798) 91.1%	5145896 (318559) 80.6%	2896054 (206811) 35.0%	12245740 (398937) 63.6%
40-49	41514 (2352) 78.1%	4137 (867) 70.8%	287* (112) 61.2%	45938 (2657) 77.3%	1081498 (84610) 75.4%	777484 (187556) 67.4%	279632* (86681) 48.7%	2138614 (231143) 67.7%
50-59	50901 (3737) 87.2%	2089* (620) 78.6%	...	52990 (3913) 86.8%	955953 (79830) 85.0%	311526* (94256) 76.2%	...	1267479 (134121) 82.7%
70-79	68685 (4202) 93.9%	1981 (335) 84.4%	177* (84) 50.0%	70843 (4122) 93.4%	1284086 (83247) 92.2%	369064 (60135) 79.5%	135566* (62067) 39.9%	1788716 (99633) 81.4%
80	954* (420) 33.6%	616* (211) 28.4%	273* (111) 13.2%	1842 (443) 26.1%	36443* (14481) 35.9%	137811* (41178) 25.8%	394782* (118552) 13.1%	569037 (126002) 15.6%
ALL	409435 (7676) 91.1%	39273 (2177) 78.5%	3989 (304) 42.2%	452696 (8283) 89.0%	9891522 (169374) 89.3%	7527247 (405710) 76.3%	3827933 (266107) 30.7%	21246702 (523632) 63.6%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
...No facilities observed.

**FIGURE III - 64**  
**BLOOD TESTS NOT PROVIDED OR FOR MANAGEMENT ONLY**  
**(NOES 1981-1983)**



NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
PROVIDE NO BLOOD TESTS OR EXAMINE MANAGEMENT ONLY

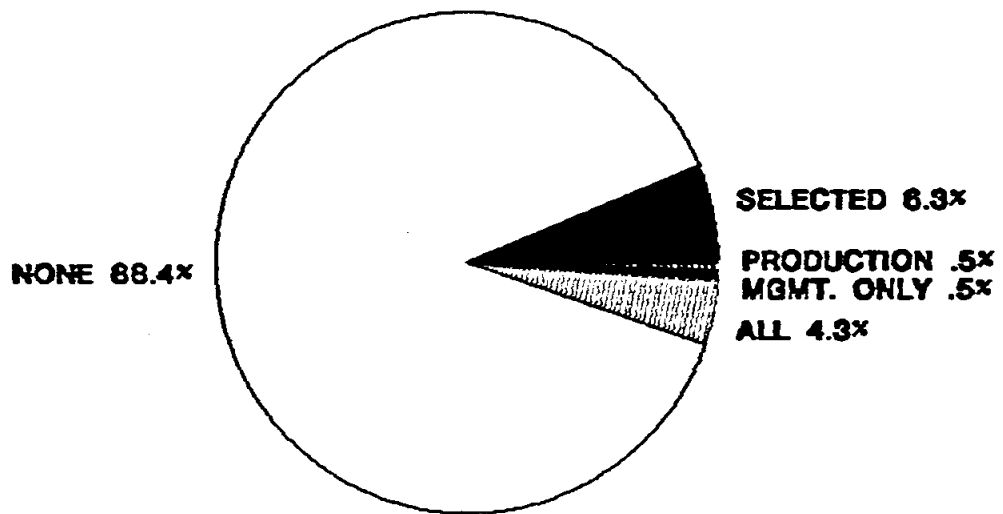
SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	5257* (1522) 94.5%	70* (67) 100.0%	...	5327* (1509) 94.6%	93378* (28886) 90.1%	7009* (6680) 100.0%	...	100387* (28672) 90.7%
13	8328 (1950) 96.9%	888* (315) 87.1%	...	9215 (2091) 95.4%	195724 (41324) 93.7%	154512* (58233) 88.8%	...	350236 (83801) 84.5%
15	24352 (1678) 97.7%	656* (167) 59.3%	68* (30) 50.3%	25076 (1671) 95.9%	552462 (43062) 98.1%	114407 (28372) 57.7%	62395* (30350) 46.3%	729264 (60194) 81.4%
16	10201 (1500) 90.4%	1016 (189) 90.8%	57* (51) 52.9%	11274 (1503) 90.1%	258309 (45541) 90.9%	192784 (41809) 92.8%	59503* (39236) 58.8%	510595 (82579) 86.1%
17	57407 (1700) 98.8%	1795 (411) 93.6%	...	59203 (1777) 98.6%	1229881 (34602) 98.2%	316753* (81615) 95.7%	...	1546634 (86046) 97.7%
20	9804 (707) 85.9%	2348 (307) 73.0%	376* (106) 67.2%	12528 (852) 82.5%	322200 (17686) 82.9%	477950 (69609) 70.9%	316887* (89373) 64.4%	1117037 (115090) 71.9%
21	26* (42) 86.5%	...	65* (47) 82.0%	91* (58) 83.3%	1608* (2605) 86.2%	...	92726* (63929) 82.7%	94334* (63432) 82.8%
22	2932 (393) 100.0%	1407 (152) 88.6%	147* (77) 49.0%	4485 (363) 93.1%	106032 (5745) 100.0%	295651 (30905) 85.2%	157790* (95602) 60.4%	559473 (92214) 78.3%
23	12481 (824) 99.7%	3069 (165) 98.9%	231* (93) 95.5%	15781 (842) 99.5%	420997 (10406) 99.3%	600493 (30442) 98.5%	178872* (78134) 85.8%	1200362 (76793) 96.6%
24	10353 (702) 96.7%	944 (142) 82.2%	92* (75) 88.7%	11390 (765) 95.2%	284212 (26693) 93.6%	151898 (25860) 82.7%	64733* (51314) 70.1%	500843 (78195) 86.4%
25	4040 (509) 97.0%	879 (149) 82.7%	115* (75) 96.9%	5034 (511) 94.2%	135513 (19904) 97.4%	217407 (39899) 84.8%	102081* (64610) 83.0%	455001 (78972) 87.7%
26	3871 (769) 94.1%	1297 (250) 82.6%	51* (36) 23.7%	5218 (801) 88.5%	123671 (16807) 89.8%	236806 (50300) 84.1%	32377* (22320) 15.7%	392853 (58791) 62.8%
27	16848 (1167) 93.0%	1732 (199) 92.5%	162* (76) 51.2%	18742 (1155) 92.3%	442631 (16102) 92.6%	337569 (52303) 93.5%	170480* (58351) 49.3%	950681 (94488) 80.2%
28	4537 (429) 73.5%	398* (130) 34.3%	141* (80) 37.2%	5076 (414) 65.8%	118947 (9952) 65.8%	57844* (20136) 22.2%	131514* (91793) 27.6%	308305* (91737) 33.6%
29	1011* (404) 100.0%	150* (50) 51.0%	...	1160* (406) 82.6%	40980* (17325) 100.0%	37822* (14270) 59.8%	...	78802* (21784) 35.5%
30	6441 (1153) 96.0%	1284* (451) 83.5%	72* (42) 32.3%	7797 (1370) 92.0%	210255 (26911) 93.4%	243982* (95033) 82.8%	49882* (26931) 21.3%	504119 (114094) 66.9%
31	931* (343) 100.0%	536 (117) 94.2%	25* (24) 100.0%	1492 (364) 97.8%	24888* (7207) 100.0%	128442 (31073) 94.8%	15664* (16901) 100.0%	168994 (35694) 96.0%
32	7789 (1184) 88.5%	680 (152) 67.2%	10* (17) 5.3%	8479 (1226) 84.8%	204090 (16496) 86.1%	134645 (32974) 64.4%	10657* (19042) 8.3%	349392 (37073) 60.7%
33	3367 (566) 81.4%	975 (208) 66.4%	77* (39) 22.8%	4419 (644) 74.4%	99425 (16698) 71.8%	206145 (41303) 66.3%	82770* (38434) 13.3%	388340 (70025) 36.3%



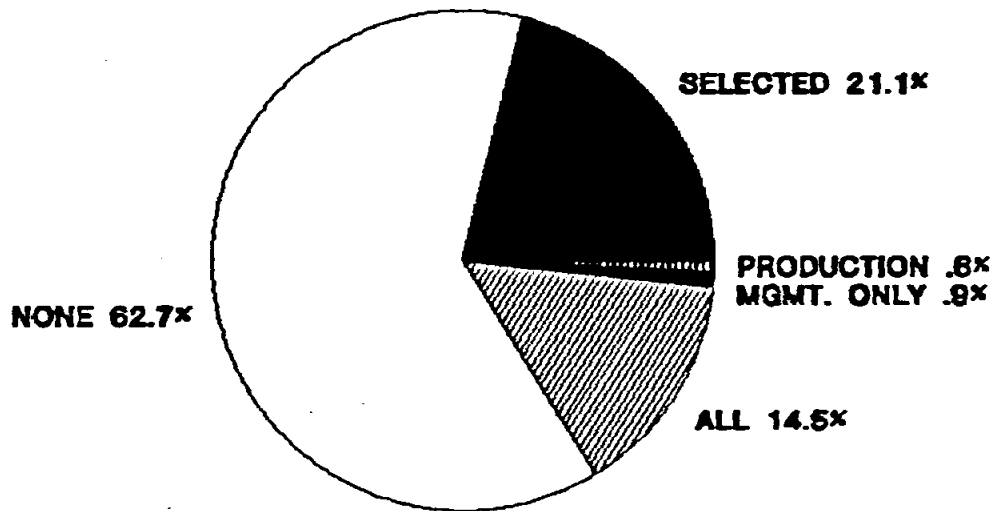
SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	16110 (1185) 87.0%	2670 (189) 85.5%	147* (65) 42.4%	18927 (1168) 86.1%	497186 (19931) 89.6%	511447 (34875) 85.7%	156090* (69849) 44.5%	1164724 (77238) 77.5%
35	22178 (1060) 97.9%	2671 (224) 78.4%	505 (84) 64.4%	25353 (1079) 94.5%	590396 (9057) 97.3%	508263 (36599) 76.9%	482060 (92259) 43.3%	1580718 (96924) 66.4%
36	6727 (488) 94.7%	2320 (194) 86.4%	333* (123) 42.3%	9380 (498) 88.7%	224204 (11280) 97.3%	474697 (31468) 85.9%	333624* (103900) 28.2%	1032525 (110510) 52.5%
37	3544 (841) 89.2%	1120 (113) 94.1%	98* (46) 23.5%	4762 (803) 85.4%	99327 (17457) 78.2%	219986 (30290) 92.0%	201421* (86828) 13.3%	520734 (84502) 27.7%
38	2634 (517) 98.0%	839 (107) 87.7%	153* (95) 36.9%	3627 (557) 89.3%	100075 (13962) 95.7%	173629 (23184) 89.3%	126523* (78596) 27.5%	400227 (89398) 52.7%
39	6211 (560) 94.8%	706* (1323) 88.5%	328* (217) 97.0%	7245 (1413) 94.2%	157154 (13876) 94.7%	131218* (248135) 87.8%	189904* (119941) 90.7%	478276* (243183) 91.2%
41	3510* (940) 79.4%	369* (168) 72.4%	...	3879* (998) 78.7%	96081 (23736) 81.7%	49845* (22368) 61.1%	...	145925* (38771) 73.3%
42	11920 (1873) 59.5%	702* (227) 47.4%	47* (36) 57.3%	12669 (1903) 58.7%	256172 (41478) 52.5%	116128* (33789) 44.9%	52886* (44449) 70.7%	425186 (54574) 51.8%
45	2559* (806) 78.9%	590* (397) 99.9%	58* (38) 39.1%	3206* (992) 80.6%	54874 (12236) 70.8%	109332* (75829) 100.0%	74014* (40123) 28.0%	238219* (84878) 52.8%
48	14576 (2079) 99.1%	814 (168) 90.2%	14* (12) 42.3%	15404 (2121) 98.5%	420974 (84764) 98.9%	157867 (37866) 89.5%	33054* (28615) 47.2%	611895 (93151) 91.0%
49	7041 (1618) 85.7%	1191* (443) 64.0%	135* (98) 78.0%	8367 (1787) 81.6%	209100 (46772) 77.6%	250116* (125397) 58.8%	101669* (59437) 69.4%	560885* (146151) 66.7%
50	25768 (2404) 84.9%	1470* (450) 81.6%	...	27238 (2484) 84.7%	513517 (63648) 81.5%	212951* (64370) 75.2%	...	726469 (105934) 79.5%
51	6205 (1112) 68.1%	...	...	6205 (1112) 66.4%	133390* (37235) 72.1%	...	...	133390* (37235) 62.9%
55	18928 (3032) 100.0%	620* (491) 99.9%	...	19548 (3239) 100.0%	309045 (54796) 100.0%	98575* (80174) 100.0%	...	407620* (110347) 100.0%
72	19664 (2492) 95.3%	633* (187) 93.8%	13* (19) 100.0%	20311 (2522) 95.3%	360695 (53284) 94.9%	76710* (23625) 93.3%	10670* (15114) 100.0%	448076 (63286) 94.7%
73	14741 (1969) 88.9%	1165 (227) 78.3%	164* (77) 48.0%	16070 (1892) 87.3%	364068 (43758) 86.4%	259775 (47297) 74.3%	124896* (57152) 38.0%	748739 (73170) 68.1%
75	24538 (3722) 93.7%	59* (60) 99.7%	...	24597 (3729) 93.7%	381374 (59555) 92.3%	8238* (8380) 100.0%	...	389612 (60199) 92.4%
76	9742 (2197) 99.9%	123* (94) 100.0%	...	9865 (2218) 99.9%	177949 (29886) 99.7%	24341* (19716) 100.0%	...	202290 (40598) 99.8%
80	954* (420) 33.6%	616* (211) 28.4%	273* (111) 13.2%	1842 (443) 26.1%	36443* (14481) 35.9%	137811* (41178) 25.8%	394782* (118552) 13.1%	569037 (126002) 15.6%
A11	407525 (7784) 91.2%	38849 (827) 78.4%	3972 (261) 42.1%	450347 (8040) 89.1%	9847226 (97896) 89.3%	7448657 (141947) 76.2%	3818927 (264487) 30.7%	21114810 (319703) 63.5%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE III - 65**  
**PROVISION OF BLOOD TESTS**  
**(NOES 1981-1983)**



**PLANTS**



**WORKERS**

### Analysis of Urine Testing

(see text on questionnaire item 22 for definitions and notes)

This sub-item was displayed on the questionnaire as:

Urine tests	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
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(Note: Response categories are as shown in the display of question 22.)

Three analyses of the responses to the urine testing sub-item are presented.

- (1) Response 2, 4, or 5 - Provision of urine tests to all, production, or selected workers

The estimates of the plants which provide urine testing to all workers, production workers, or selected workers, and workers in those plants (by number and proportion of the totals) are displayed in Figures III-66 and III-67, and Tables III-57 and III-58.

Figure III-66	Urine tests provided to all or selected workers (by major industrial group)
Figure III-67	Urine tests provided to all or selected workers (by 2-digit SIC)
Table III-57	Number and percent of plants and employees in plants which provide urine tests to all or selected workers (by major industry group)
Table III-58	Number and percent of plants and employees in plants which provide urine tests to all or selected workers (by 2-digit SIC)

- (2) Response 1 or 3 - No provision of urine tests, or testing of management personnel only

The estimates of plants which either do not provide any urine tests or provide them only to management personnel, and workers in those plants (by number and proportion of the totals) are displayed in Figures III-68 and III-69, and Tables III-59 and III-60.

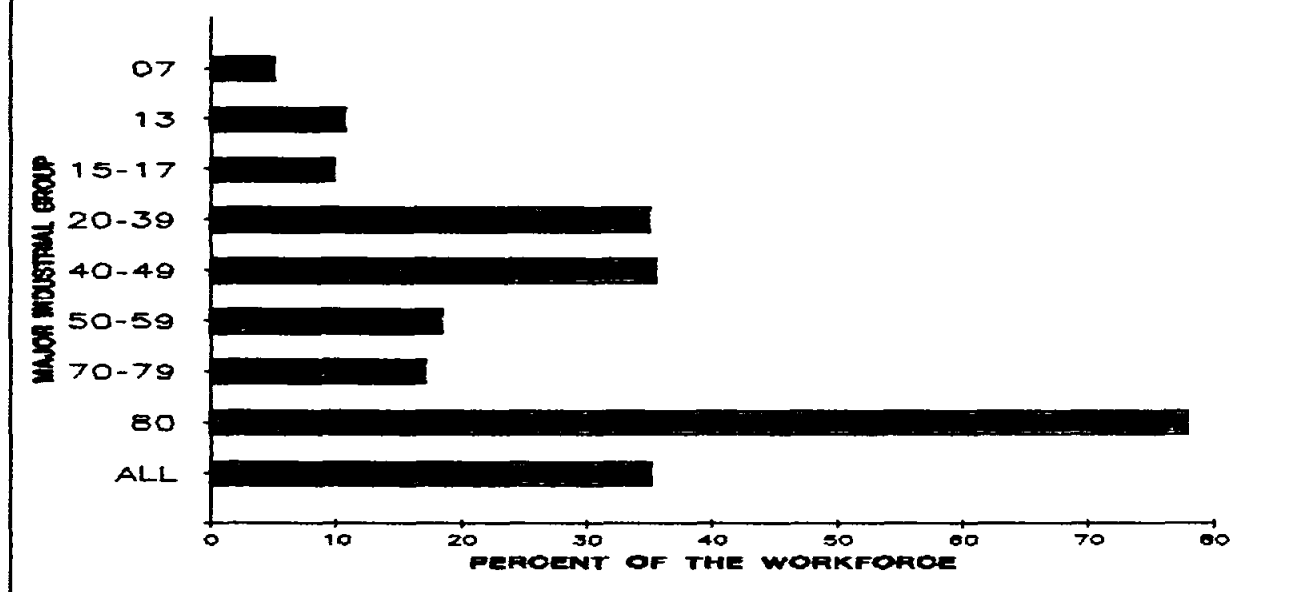
Figure III-68	Urine tests not provided or for management only (by major industrial group)
Figure III-69	Urine tests not provided or for management only (by 2-digit SIC)
Table III-59	Number and percent of plants and employees in plants which provide no urine tests or examine management only (by major industrial group)
Table III-60	Number and percent of plants and employees in plants which provide no urine tests or examine management only (by 2-digit SIC)

**(3) Response 1, 2, 3, 4, or 5 - Provision of urine tests**

**The estimated proportions of plants and workers in those plants corresponding to each of the five possible responses to the urine test inquiry are presented in Figure III-70.**

**Figure III-70      Provision of urine tests**

**FIGURE III - 66**  
**URINE TESTS PROVIDED TO ALL OR SELECTED WORKERS**  
**(NOES 1981-1983)**



NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-57

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 PROVIDE URINE TESTS TO ALL OR SELECTED WORKERS

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	144* (138) 2.6%	...	...	144* (138) 2.6%	5758* (5510) 5.6%	...	...	5758* (5510) 5.2%
13	457* (221) 5.3%	187* (106) 18.4%	...	644* (200) 6.7%	15855* (7035) 7.6%	29206* (16103) 16.8%	...	45061* (14586) 10.9%
15-17	2715 (603) 2.9%	677* (235) 16.3%	118* (112) 48.7%	3510 (646) 3.6%	76891* (20093) 3.7%	113155* (37457) 15.4%	114159* (80672) 48.4%	304205* (87431) 9.9%
20-39	10770 (1829) 7.0%	5645 (583) 17.8%	3187 (194) 50.8%	19602 (1865) 10.2%	378958 (58053) 8.2%	1193197 (145207) 18.7%	5211483 (300090) 63.1%	6783638 (386858) 35.2%
40-49	14568 (1847) 27.4%	2126 (393) 36.4%	182* (53) 38.8%	16876 (1986) 28.4%	398856 (55076) 27.8%	435135 (88927) 37.7%	294111* (84214) 51.3%	1128102 (143708) 35.7%
50-59	8134 (1207) 13.9%	569* (302) 21.4%	...	8704 (1173) 14.3%	189299 (31377) 16.8%	97300* (52795) 23.8%	...	286599 (56886) 18.7%
70-79	3638* (1330) 5.0%	323* (111) 13.8%	177* (109) 50.0%	4138* (1316) 5.5%	86216* (30493) 6.2%	89938* (24855) 19.4%	203994* (100787) 60.1%	380148* (105782) 17.3%
80	1057* (467) 37.2%	1325 (267) 61.2%	1622 (214) 78.7%	4004 (606) 56.7%	37131* (12204) 36.5%	342297 (74498) 64.0%	2476477 (290267) 81.9%	2855905 (288810) 78.1%
ALL	41482 (3260) 9.2%	10853 (858) 21.7%	5286 (333) 56.0%	57621 (3372) 11.3%	1188964 (94607) 10.7%	2300228 (199024) 23.3%	8300225 (445047) 66.6%	11789416 (525391) 35.3%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

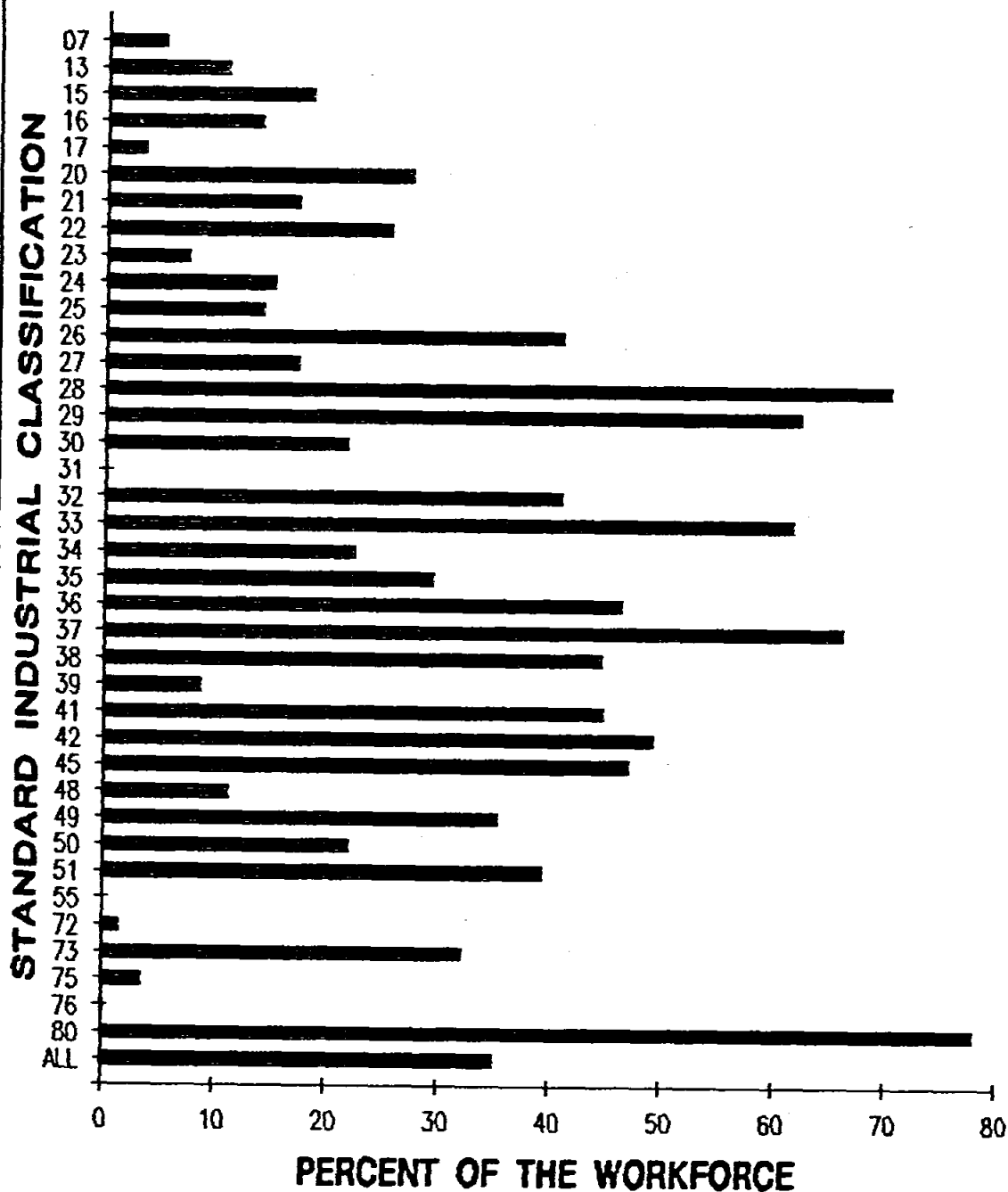
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
PROVIDE URINE TESTS TO ALL OR SELECTED WORKERS

SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	144* (138) 2.6%	...	...	144* (138) 2.6%	5758* (5510) 5.6%	...	...	5758* (5510) 5.2%
13	457* (221) 5.3%	187* (106) 18.4%	...	644* (200) 6.7%	15855* (7035) 7.6%	29206* (16103) 16.8%	...	45061* (14586) 10.9%
15	564* (396) 2.3%	451* (205) 40.7%	67* (93) 49.8%	1082* (453) 4.1%	10427* (7521) 1.9%	83811* (33788) 42.3%	72404* (63356) 53.7%	166641* (68940) 18.6%
16	1083* (476) 9.6%	103* (73) 9.2%	51* (56) 47.4%	1236* (499) 9.9%	25781* (10182) 9.1%	14975* (10754) 7.2%	41755* (44854) 41.2%	82511* (46447) 13.9%
17	1068* (477) 1.8%	123* (106) 6.4%	...	1191* (473) 2.0%	40683* (18821) 3.2%	14369* (12505) 4.3%	...	55053* (21789) 3.5%
20	1509* (408) 13.2%	833* (233) 25.9%	196* (85) 35.0%	2537* (459) 16.7%	63161* (17655) 16.3%	183280* (65741) 27.2%	180641* (80638) 36.7%	427082* (77755) 27.5%
21	4* (6) 14.6%	...	14* (28) 17.5%	18* (25) 16.7%	258* (345) 13.8%	...	19407* (32122) 17.3%	19665* (31898) 17.3%
22	...	242* (104) 15.2%	168* (73) 56.0%	409* (170) 8.5%	...	70180* (27010) 20.2%	112745* (49304) 43.2%	182925* (71829) 25.6%
23	233* (163) 1.9%	33* (35) 1.1%	58* (43) 24.1%	325* (155) 2.0%	6591* (4374) 1.6%	9429* (9805) 1.5%	76627* (48463) 36.8%	92647* (47738) 7.5%
24	358* (229) 3.3%	269* (155) 23.5%	12* (10) 11.5%	640* (280) 5.3%	19435* (13438) 6.4%	40835* (24131) 22.2%	27621* (22969) 29.9%	87891* (36641) 15.2%
25	124* (123) 3.0%	209* (106) 19.7%	3* (4) 2.7%	336* (194) 6.3%	3596* (3575) 2.6%	49310* (27700) 19.2%	20917* (22806) 17.0%	73823* (37887) 14.2%
26	301* (190) 7.3%	290* (120) 18.5%	191* (66) 89.1%	782* (252) 13.3%	17298* (12395) 12.6%	49119* (18577) 17.5%	190997* (60232) 92.3%	257413* (64321) 41.1%
27	1078* (412) 6.0%	137* (61) 7.3%	151* (65) 47.9%	1367* (399) 6.7%	26881* (7628) 5.6%	24443* (14534) 6.8%	154960* (52769) 44.8%	206284* (51700) 17.4%
28	1534 (371) 24.8%	738 (137) 63.6%	317 (57) 83.3%	2588 (426) 33.6%	58191 (8919) 32.2%	191044 (33014) 73.2%	396664 (80653) 83.3%	645899 (86699) 70.4%
29	...	117* (124) 40.1%	101* (42) 100.0%	219* (139) 15.6%	...	20684* (16579) 32.7%	117545* (70259) 100.0%	138229* (75230) 62.3%
30	81* (64) 1.2%	219* (122) 14.2%	116* (66) 51.8%	416* (164) 4.9%	4610* (3658) 2.0%	45837* (25450) 15.6%	113639* (64945) 48.6%	164086* (67943) 21.8%
31	...	...	...	...	...	...	...	...
32	1047* (431) 11.9%	322* (118) 31.8%	180* (73) 98.0%	1550* (442) 15.5%	36386* (12687) 15.3%	73896* (32030) 35.4%	125386* (51033) 97.2%	235668* (59146) 41.0%
33	627* (253) 15.2%	526* (176) 35.9%	269 (59) 80.0%	1422 (342) 23.9%	28484* (11121) 20.6%	105764* (35081) 34.0%	528137 (82983) 85.0%	662385 (98234) 61.8%

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	2342* (636) 12.6%	410* (114) 13.1%	205* (82) 59.1%	2957 (626) 13.4%	57510* (15156) 10.4%	70238* (21511) 11.8%	210283* (104911) 59.9%	338031* (109276) 22.5%
35	366* (207) 1.6%	580* (176) 17.0%	291 (64) 37.1%	1236 (301) 4.6%	10679* (5197) 1.8%	108183* (32518) 16.4%	586317 (97183) 52.7%	705179 (103235) 29.6%
36	377* (340) 5.3%	399* (132) 14.9%	413 (99) 52.5%	1189* (390) 11.2%	6285* (5098) 2.7%	86785* (32169) 15.7%	820615 (174783) 69.4%	913685 (184717) 46.5%
37	345* (272) 8.7%	70* (45) 5.9%	279* (87) 67.1%	695* (291) 12.4%	23123* (18276) 18.2%	19198* (13329) 8.0%	1204233 (278281) 79.5%	1246554 (277648) 66.3%
38	146* (89) 5.4%	158* (68) 16.6%	214* (84) 51.4%	518* (153) 12.8%	8072* (5862) 7.7%	26742* (13938) 13.8%	305283* (113490) 66.3%	340097* (111831) 44.8%
39	298* (197) 4.5%	92* (183) 11.5%	10* (10) 3.0%	399* (269) 5.2%	8399* (5825) 5.1%	18231* (32526) 12.2%	19466* (18968) 9.3%	46096* (36387) 8.8%
41	1398* (388) 31.6%	232* (165) 45.5%	...	1630* (433) 33.1%	42268* (13908) 35.9%	47092* (39241) 57.8%	...	89360* (40815) 44.9%
42	9396 (1285) 46.9%	840* (234) 56.7%	35* (34) 42.2%	10270 (1348) 47.6%	238033 (33376) 48.8%	146047* (37570) 56.4%	21944* (14011) 29.3%	406024 (47503) 49.4%
45	683* (551) 21.1%	...	90* (36) 61.2%	773* (552) 19.4%	22623* (15924) 29.2%	...	190241* (82889) 72.0%	212864* (84963) 47.2%
48	877* (732) 6.0%	88* (81) 9.7%	19* (16) 56.8%	984* (728) 6.3%	20926* (15412) 4.9%	18455* (17704) 10.5%	37029* (29526) 52.8%	76411* (45675) 11.4%
49	1577* (821) 19.2%	763* (275) 41.0%	38* (33) 21.8%	2378* (890) 23.2%	63493* (34164) 23.6%	189897* (73060) 44.6%	44896* (40405) 30.6%	298286* (99573) 35.5%
50	4827 (1183) 15.9%	332* (201) 18.4%	...	5159 (1157) 16.0%	132493* (33132) 21.0%	70288* (48460) 24.8%	...	202781* (58604) 22.2%
51	3307 (693) 36.3%	237* (237) 100.0%	...	3544 (786) 37.9%	56806* (14420) 30.7%	27013* (27013) 100.0%	...	83818* (34843) 39.5%
55	...	...	...	...	...	...	...	...
72	216* (241) 1.0%	...	...	216* (241) 1.0%	8211* (9165) 2.2%	...	...	8211* (9165) 1.7%
73	2441* (1051) 14.7%	323* (111) 21.7%	177* (109) 51.9%	2942* (1033) 16.0%	62318* (27445) 14.8%	89938* (24855) 25.7%	203994* (100787) 62.0%	356250* (107286) 32.4%
75	971* (746) 3.7%	...	...	971* (746) 3.7%	15203* (12925) 3.7%	...	...	15203* (12925) 3.6%
76	9* (8) .1%	...	...	9* (8) .1%	483* (423) .3%	...	...	483* (423) .2%
80	1057* (467) 37.2%	1325 (267) 61.2%	1622 (214) 78.7%	4004 (606) 56.7%	37131* (12204) 36.5%	342297 (74498) 64.0%	2476477 (290267) 81.9%	2855905 (288810) 78.1%
All	40845 (3381) 9.1%	10650 (815) 21.5%	5286 (321) 56.1%	56781 (3572) 11.2%	1177451 (92511) 10.7%	2266584 (169137) 23.2%	8300225 (438530) 66.6%	11744260 (484030) 35.3%

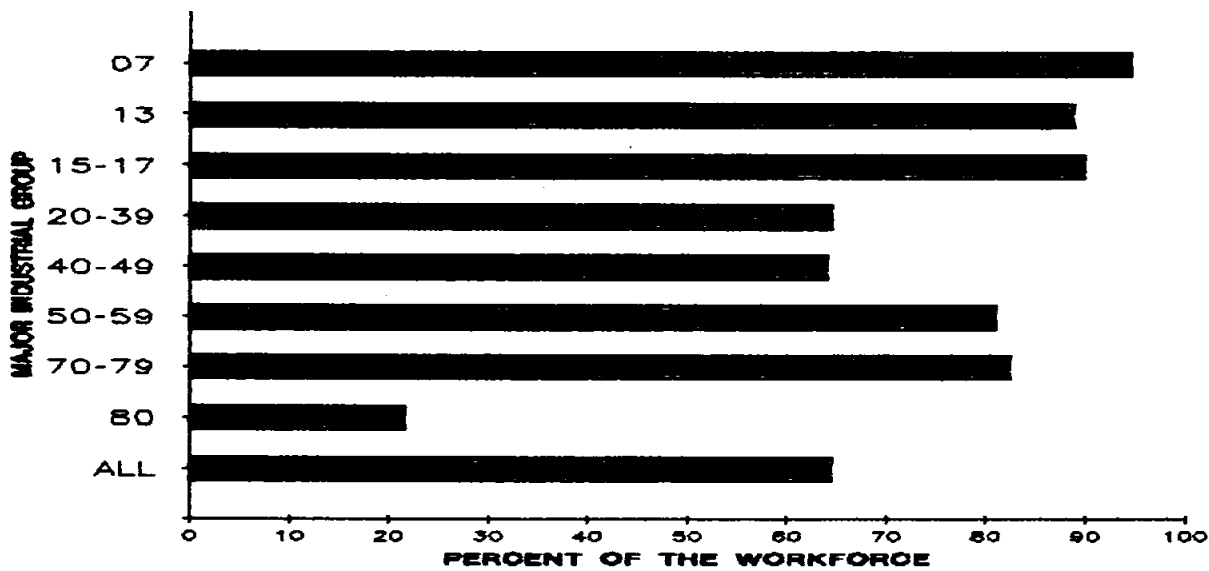
\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE III - 67**  
**URINE TESTS PROVIDED TO ALL OR SELECTED WORKERS**  
**(NCHS 1981-1983)**





**FIGURE III - 68**  
**URINE TESTS NOT PROVIDED OR FOR MANAGEMENT ONLY**  
**(NOES 1981-1983)**



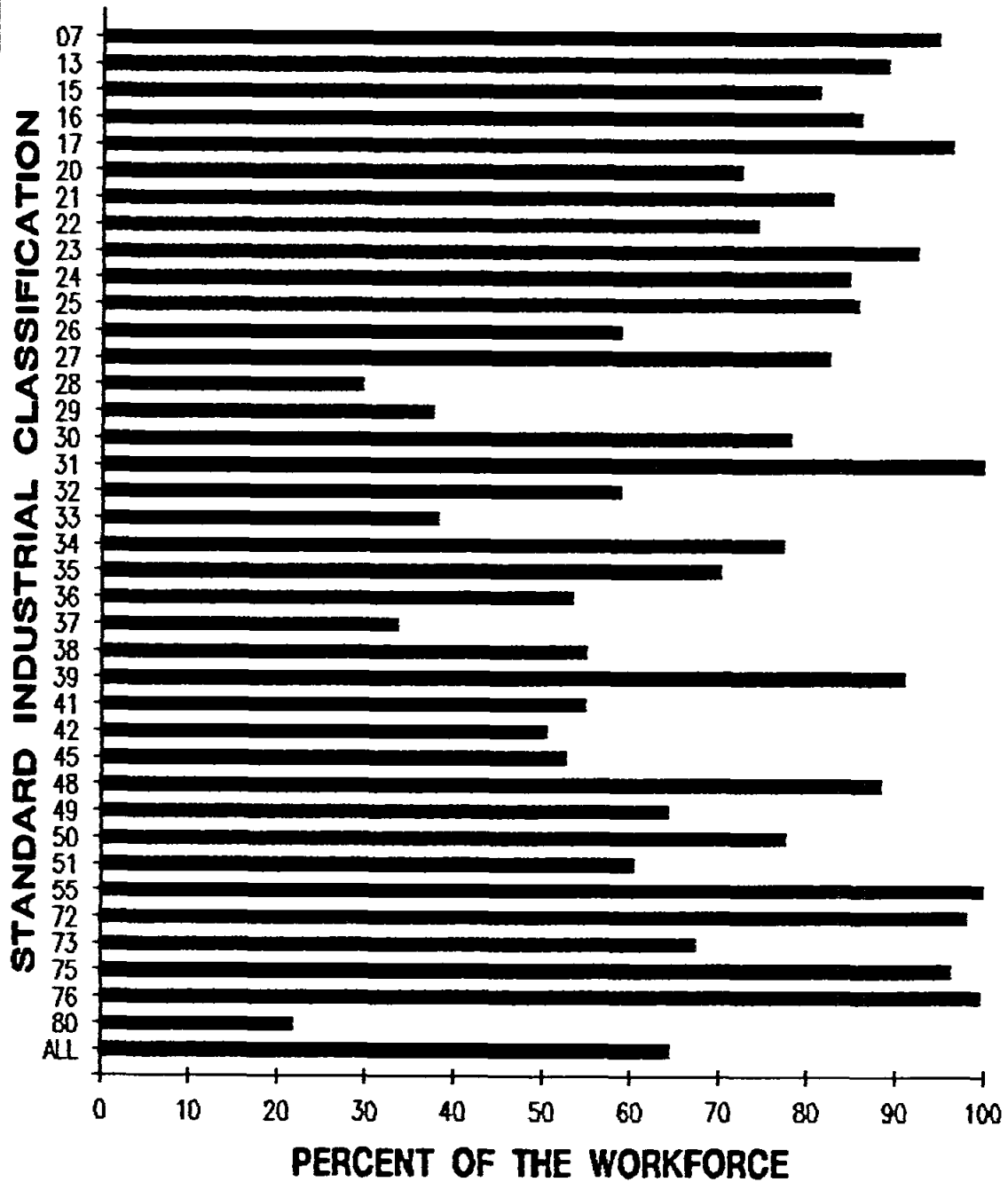
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-59

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 PROVIDE NO URINE TESTS OR EXAMINE MANAGEMENT ONLY

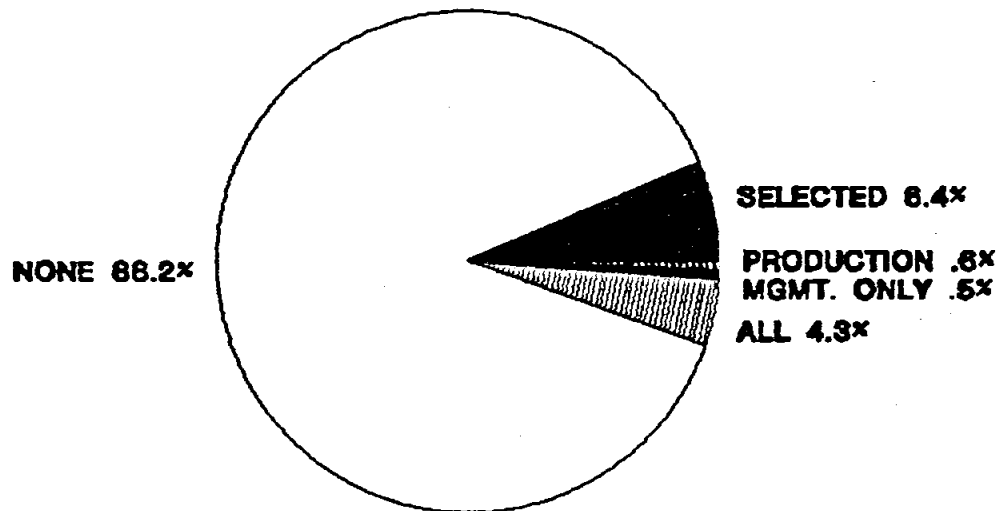
MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	5419* (1542) 97.4%	70* (67) 100.0%	...	5490* (1529) 97.5%	97924* (29580) 94.4%	7009* (6680) 100.0%	...	104934* (29294) 94.8%
13	8141 (1876) 94.7%	832* (305) 81.6%	46* (52) 100.0%	9018 (2052) 93.3%	193103 (40048) 92.4%	144737* (56603) 83.2%	31383* (35291) 100.0%	369222* (99133) 89.1%
15-17	91617 (2403) 97.1%	3468 (469) 83.7%	124* (62) 51.4%	95210 (2478) 96.4%	2022002 (25145) 96.3%	623944 (101544) 84.6%	121898* (51199) 51.6%	2767844 (107168) 90.1%
20-39	142472 (3156) 93.0%	26109 (1845) 82.2%	3082 (198) 49.2%	171664 (4035) 89.8%	4236737 (75603) 91.8%	5187617 (340757) 81.3%	3053837 (203243) 36.9%	12478190 (447331) 64.8%
40-49	38584 (2412) 72.6%	3718 (824) 63.6%	287* (112) 61.2%	42588 (2684) 71.6%	1035013 (84810) 72.2%	718179* (182300) 62.3%	279632* (86681) 48.7%	2032824 (226486) 64.3%
50-59	50258 (3654) 86.1%	2089* (620) 78.6%	...	52347 (3836) 85.7%	935075 (78334) 83.2%	311526* (94256) 76.2%	...	1246602 (133144) 81.3%
70-79	69496 (4210) 95.0%	2023 (334) 86.2%	177* (84) 50.0%	71696 (4159) 94.5%	1306958 (82124) 93.8%	374574 (60295) 80.6%	135566* (62067) 39.9%	1817099 (100331) 82.7%
80	1782* (620) 62.8%	842* (215) 38.9%	439* (154) 21.3%	3063 (597) 43.3%	64513* (18744) 63.5%	192188 (45712) 36.0%	546198* (168706) 18.1%	802899 (160937) 21.9%
ALL	407770 (7675) 90.8%	39150 (2224) 78.3%	4156 (299) 44.0%	451076 (8280) 88.7%	9891326 (171031) 89.3%	7559774 (421329) 76.7%	4168515 (291552) 33.4%	21619615 (572072) 64.7%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

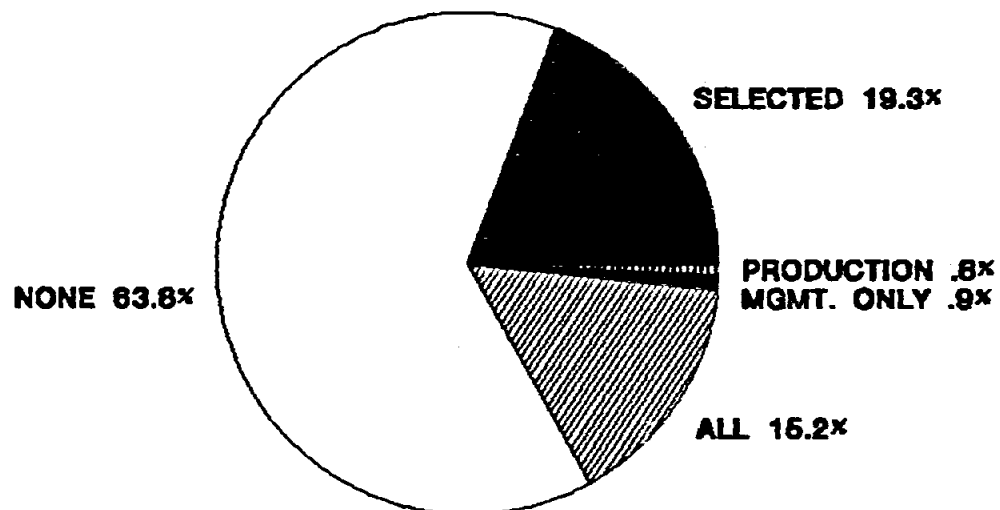
**FIGURE III - 69**  
**URINE TESTS NOT PROVIDED OR FOR MANAGEMENT ONLY**  
**(NOES 1981-1983)**



**FIGURE III - 70**  
**PROVISION OF URINE TESTS**  
**(NOES 1981-1983)**



**PLANTS**



**WORKERS**

## NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-60

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
PROVIDE NO URINE TESTS OR EXAMINE MANAGEMENT ONLY

SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	5419* (1542) 97.4%	70* (67) 100.0%	...	5490* (1529) 97.5%	97924* (29580) 94.4%	7009* (6680) 100.0%	...	104934* (29294) 94.8%
13	8141 (1876) 94.7%	832* (305) 81.6%	46* (52) 100.0%	9018 (2052) 93.3%	193103 (40048) 92.4%	144737* (56603) 83.2%	31383* (35291) 100.0%	369222* (99133) 89.1%
15	24352 (1678) 97.7%	656* (167) 59.3%	68* (30) 50.3%	25076 (1671) 95.9%	552462 (43062) 98.1%	114407 (28372) 57.7%	62395* (30350) 46.3%	729264 (60194) 81.4%
16	10201 (1500) 90.4%	1016 (189) 90.8%	57* (51) 52.9%	11274 (1503) 90.1%	258309 (45541) 90.9%	192784 (41809) 92.8%	59503* (39236) 58.8%	510595 (82579) 86.1%
17	57064 (1669) 98.2%	1795 (411) 93.6%	...	58860 (1775) 98.0%	1211232 (31073) 96.8%	316753* (81615) 95.7%	...	1527985 (92449) 96.5%
20	9904 (721) 86.8%	2383 (333) 74.1%	364 (80) 65.1%	12650 (866) 83.3%	325277 (18315) 83.7%	490500 (76363) 72.8%	311134 (68022) 63.3%	1126911 (106283) 72.5%
21	26* (42) 86.5%	...	65* (47) 82.0%	91* (58) 83.3%	1608* (2605) 86.2%	...	92726* (63929) 82.7%	94334* (63432) 82.8%
22	2932 (393) 100.0%	1347 (152) 84.8%	131* (76) 43.9%	4410 (368) 91.5%	106032 (5745) 100.0%	276893 (30076) 79.8%	148348* (95315) 56.8%	531273 (100404) 74.4%
23	12280 (840) 98.1%	3069 (165) 98.9%	184* (75) 76.0%	15533 (858) 98.0%	417313 (8341) 98.4%	600493 (30442) 98.5%	131810* (60544) 63.2%	1149616 (62372) 92.5%
24	10353 (702) 96.7%	878 (154) 76.5%	92* (75) 88.7%	11324 (788) 94.7%	284212 (26693) 93.6%	142750 (28483) 77.8%	64733* (51314) 70.1%	491695 (82455) 84.8%
25	4040 (509) 97.0%	853 (155) 80.3%	115* (75) 96.9%	5008 (514) 93.7%	135513 (19904) 97.4%	207132 (42752) 80.8%	102081* (64610) 83.0%	444726 (81204) 85.8%
26	3812 (735) 92.7%	1278 (251) 81.5%	24* (21) 11.0%	5114 (753) 86.7%	120356 (15625) 87.4%	232357 (49612) 82.5%	15867* (14033) 7.7%	368581 (51170) 58.9%
27	17039 (1152) 94.0%	1736 (182) 92.7%	165* (68) 52.3%	18941 (1123) 93.3%	451251 (14340) 94.4%	336459 (49573) 93.2%	190791* (55574) 55.2%	978500 (90325) 82.6%
28	4639 (427) 75.2%	423* (137) 36.4%	63* (43) 16.6%	5125 (430) 66.4%	122548 (9566) 67.8%	69787* (23703) 26.8%	79677* (78104) 16.7%	272012* (75286) 29.6%
29	1011* (404) 100.0%	176* (71) 60.0%	...	1187* (404) 84.5%	40980* (17325) 100.0%	42572* (18214) 67.3%	...	83552* (23984) 37.7%
30	6630 (1144) 98.8%	1318* (470) 85.8%	108* (45) 48.1%	8056 (1347) 95.1%	220394 (27114) 98.0%	248693* (97991) 84.4%	120008* (47195) 51.4%	589095 (102586) 78.2%
31	931* (343) 100.0%	569 (131) 100.0%	25* (24) 100.0%	1525 (372) 100.0%	24888* (7207) 100.0%	135459* (34334) 100.0%	15664* (16901) 100.0%	176011 (38675) 100.0%
32	7751 (1198) 88.1%	690 (155) 68.2%	3* (11) 1.9%	8445 (1238) 84.5%	200774 (18904) 84.7%	135088 (32660) 64.6%	3607* (11505) 2.8%	339469 (39729) 59.0%
33	3508 (552) 84.9%	942 (222) 64.2%	68* (32) 20.0%	4517 (624) 76.1%	109984 (16958) 79.4%	205317 (45552) 66.0%	93362* (30894) 15.0%	408663 (61091) 38.2%

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	16178 (1180) 87.4%	2712 (200) 86.9%	141* (47) 40.7%	19031 (1140) 86.6%	497375 (19438) 89.6%	526446 (33795) 88.2%	140773* (38541) 40.1%	1164594 (49082) 77.5%
35	22285 (1071) 98.4%	2825 (205) 83.0%	493 (65) 62.9%	25603 (1079) 95.4%	596121 (9323) 98.2%	552937 (32517) 83.6%	526616 (88035) 47.3%	1675674 (100408) 70.4%
36	6727 (488) 94.7%	2286 (190) 85.1%	374* (141) 47.6%	9387 (487) 88.8%	224204 (11280) 97.3%	465877 (32216) 84.3%	361847* (116045) 30.6%	1051928 (117747) 53.5%
37	3628 (834) 91.3%	1120 (113) 94.1%	137* (52) 32.8%	4885 (797) 87.6%	103899 (17806) 81.8%	219986 (30290) 92.0%	309775* (103066) 20.5%	633660 (100862) 33.7%
38	2543 (520) 94.6%	798 (101) 83.4%	202* (114) 48.6%	3544 (583) 87.2%	96530 (13761) 92.3%	167651 (25785) 86.2%	155114* (89470) 33.7%	419295 (94338) 55.2%
39	6256 (568) 95.5%	706* (1323) 88.5%	328* (217) 97.0%	7290 (1382) 94.8%	157478 (13498) 94.9%	131218* (248135) 87.8%	189904* (119941) 90.7%	478600* (241914) 91.2%
41	3022* (882) 68.4%	278* (153) 54.5%	...	3300* (921) 66.9%	75364* (20674) 64.1%	34450* (18652) 42.2%	...	109814* (32387) 55.1%
42	10631 (1564) 53.1%	642* (208) 43.3%	47* (36) 57.3%	11320 (1612) 52.4%	249770 (39486) 51.2%	112775* (34650) 43.6%	52886* (44449) 70.7%	415430 (58314) 50.6%
45	2559* (806) 78.9%	590* (397) 99.9%	58* (38) 39.1%	3206* (992) 80.6%	54874 (12236) 70.8%	109332* (75829) 100.0%	74014* (40123) 28.0%	238219* (84878) 52.8%
48	13825 (2112) 94.0%	814 (168) 90.2%	14* (12) 42.3%	14653 (2165) 93.7%	404832 (82074) 95.1%	157867 (37866) 89.5%	33054* (28615) 47.2%	595752 (91679) 88.6%
49	6638 (1645) 80.8%	1099* (417) 59.0%	135* (98) 78.0%	7872 (1812) 76.8%	205877 (47849) 76.4%	235573* (121399) 55.4%	101669* (59437) 69.4%	543118* (144204) 64.5%
50	25522 (2374) 84.1%	1470* (450) 81.6%	...	26992 (2449) 84.0%	497811 (60101) 79.0%	212951* (64370) 75.2%	...	710763 (101336) 77.8%
51	5807 (1019) 63.7%	...	...	5807 (1019) 62.1%	128219* (36716) 69.3%	...	...	128219* (36716) 60.5%
55	18928 (3032) 100.0%	620* (491) 99.9%	...	19548 (3239) 100.0%	309045 (54796) 100.0%	98575* (80174) 100.0%	...	407620* (110347) 100.0%
72	20413 (2485) 99.0%	675* (190) 100.0%	13* (19) 100.0%	21102 (2536) 99.0%	371808 (52648) 97.8%	82220* (24190) 100.0%	10670* (15114) 100.0%	464699 (65026) 98.3%
73	14133 (1792) 85.3%	1165 (227) 78.3%	164* (77) 48.0%	15462 (1686) 84.0%	359130 (42409) 85.2%	259775 (47297) 74.3%	124896* (57152) 38.0%	743800 (70187) 67.6%
75	25208 (3771) 96.3%	59* (60) 99.7%	...	25267 (3776) 96.3%	398072 (59596) 96.3%	8238* (8380) 100.0%	...	406310 (60009) 96.4%
76	9742 (2197) 99.9%	123* (94) 100.0%	...	9865 (2218) 99.9%	177949 (29886) 99.7%	24341* (19716) 100.0%	...	202290 (40598) 99.8%
80	1782* (620) 62.8%	842* (215) 38.9%	439* (154) 21.3%	3063 (597) 43.3%	64513* (18744) 63.5%	192188 (45712) 36.0%	546198* (168706) 18.1%	802899 (160937) 21.9%
All	405860 (7222) 90.9%	38903 (813) 78.5%	4139 (282) 43.9%	448902 (7207) 88.8%	9847029 (107310) 89.3%	7507197 (148302) 76.8%	4159509 (316647) 33.4%	21513736 (345326) 64.7%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

### Analysis of Pulmonary Function Testing

(see text on questionnaire item 22 for definitions and notes)

This sub-item was displayed on the questionnaire as:

Pulmonary function	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
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(Note: Response categories are as shown in the display of question 22.)

Three analyses of the responses to the pulmonary function sub-item are presented.

- (1) Response 2, 4, or 5 - Provision of pulmonary function tests to all, production, or selected workers

The estimates of the plants which provide pulmonary function testing to all workers, production workers, or selected workers, and workers in those plants (by number and proportion of the totals) are displayed in Figures III-71 and III-72, and Tables III-61 and III-62.

Figure III-71	Pulmonary tests provided to all or selected workers (by major industrial group)
Figure III-72	Pulmonary tests provided to all or selected workers (by 2-digit SIC)
Table III-61	Number and percent of plants and employees in plants which provide pulmonary tests to all or selected workers (by major industry group)
Table III-62	Number and percent of plants and employees in plants which provide pulmonary tests to all or selected workers (by 2-digit SIC)

- (2) Response 1 or 3 - No provision of pulmonary function tests, or testing of management personnel only

The estimates of plants which either do not provide any pulmonary function tests or provide them only to management personnel, and workers in those plants (by number and proportion of the totals) are displayed in Figures III-73 and III-74, and Tables III-63 and III-64.

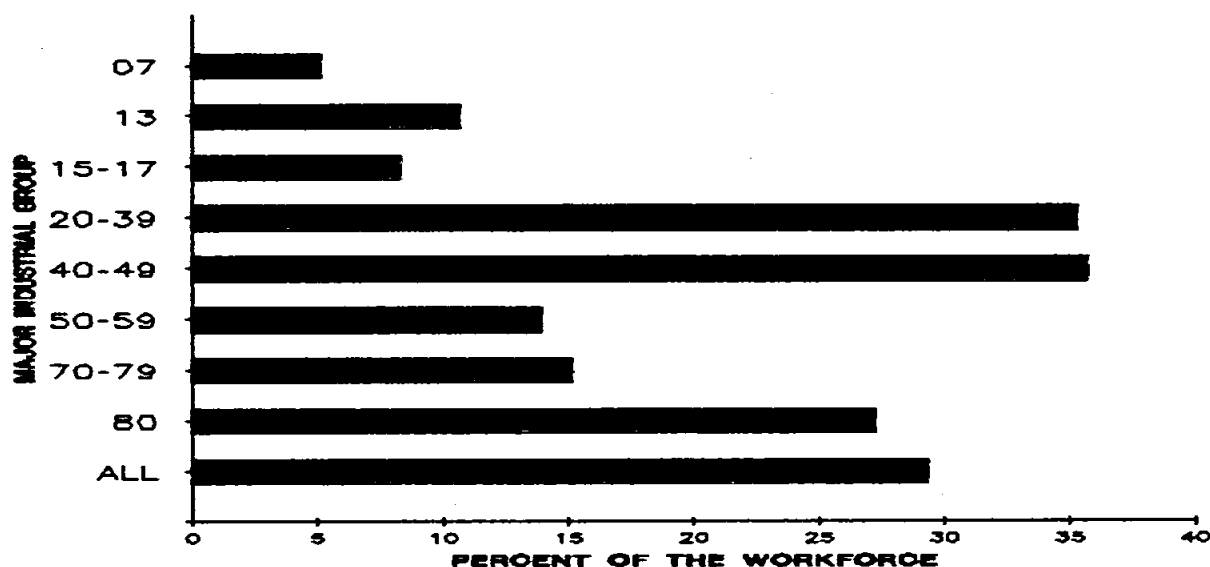
Figure III-73	Pulmonary tests not provided or for management only (by major industrial group)
Figure III-74	Pulmonary tests not provided or for management only (by 2-digit SIC)
Table III-63	Number and percent of plants and employees in plants which provide no pulmonary tests or examine management only (by major industrial group)
Table III-64	Number and percent of plants and employees in plants which provide no pulmonary tests or examine management only (by 2-digit SIC)

**(3) Response 1, 2, 3, 4, or 5 - Provision of pulmonary function tests**

The estimated proportions of plants and workers in those plants corresponding to each of the five possible responses to the pulmonary function inquiry are presented in Figure III-75.

**Figure III-75      Provision of pulmonary tests**

**FIGURE III - 71**  
**PULMONARY TESTS PROVIDED TO ALL OR SELECTED WORKERS**  
 (NOES 1981-1983)



NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-61

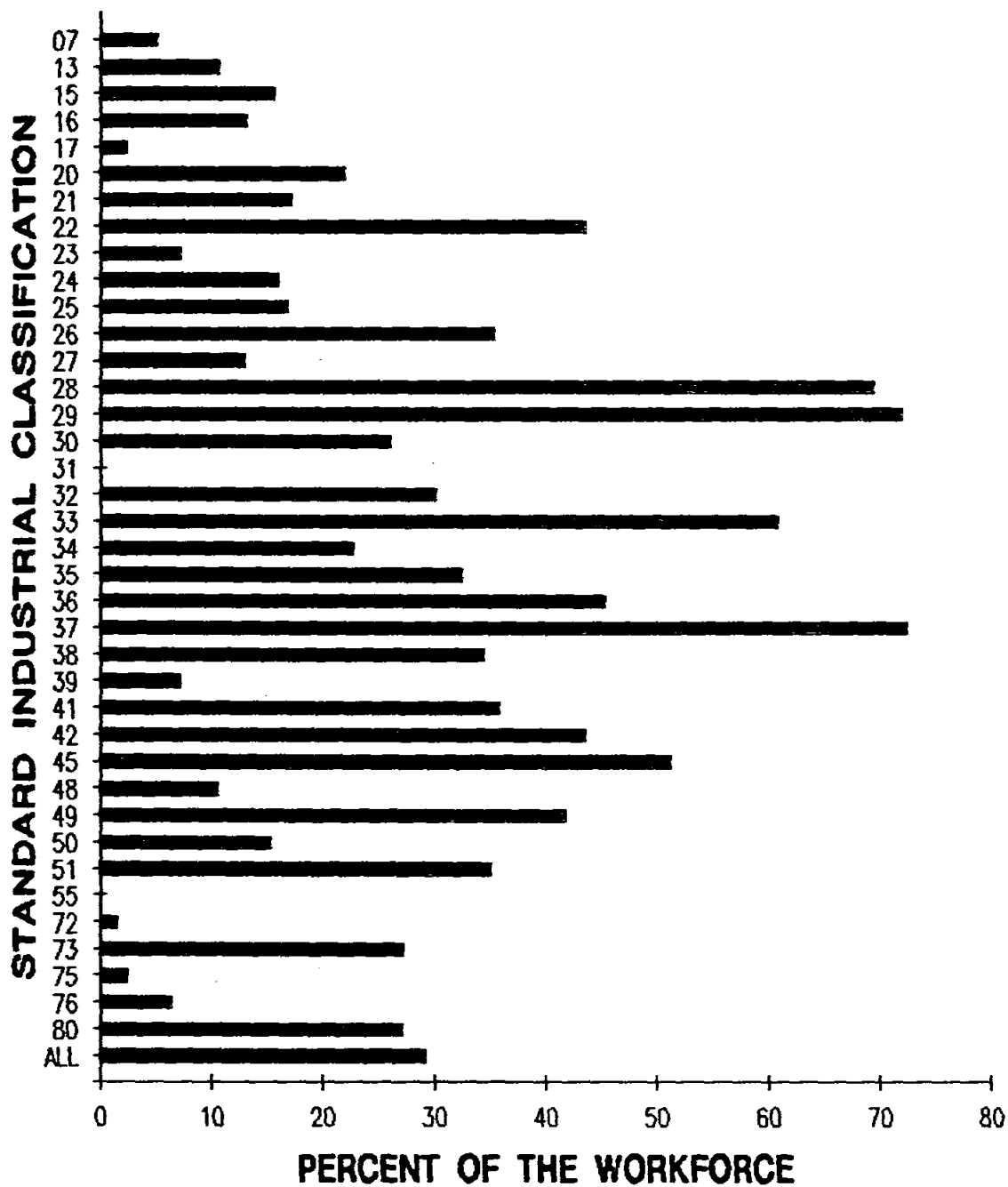
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 PROVIDE PULMONARY TESTS TO ALL OR SELECTED WORKERS

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	144* (138) 2.6%	...	...	144* (138) 2.6%	5758* (5510) 5.6%	...	...	5758* (5510) 5.2%
13	269* (159) 3.1%	...	46* (52) 100.0%	316* (159) 3.3%	13234* (7284) 6.3%	...	31383* (35291) 100.0%	44616* (33862) 10.8%
15-17	1960 (467) 2.1%	568* (227) 13.7%	117* (110) 48.2%	2644 (577) 2.7%	46308 (10783) 2.2%	87626* (30704) 11.9%	125485* (82018) 53.2%	259419* (90333) 8.4%
20-39	10117 (1705) 6.6%	5374 (699) 16.9%	2977 (193) 47.5%	18468 (1892) 9.7%	392833 (57108) 8.5%	1169273 (158189) 18.3%	5261481 (276940) 63.7%	6823587 (391312) 35.4%
40-49	10949 (1938) 20.6%	2038 (393) 34.9%	268* (104) 57.3%	13255 (2091) 22.3%	317242 (57474) 22.1%	413594 (87965) 35.9%	401567 (89624) 70.0%	1132403 (158870) 35.8%
50-59	5679 (1178) 9.7%	404* (252) 15.2%	...	6083 (1170) 10.0%	137933 (26847) 12.3%	77167* (43219) 18.9%	...	215101 (48466) 14.0%
70-79	1580* (887) 2.2%	305* (109) 13.0%	172* (112) 48.6%	2057* (894) 2.7%	46778* (24164) 3.4%	86045* (27239) 18.5%	200873* (102687) 59.2%	333697* (102663) 15.2%
80	95* (74) 3.3%	244* (85) 11.3%	631 (131) 30.6%	970 (118) 13.7%	4724* (3644) 4.6%	54636* (22591) 10.2%	940213 (180997) 31.1%	999573 (173055) 27.3%
ALL	30792 (3018) 6.9%	8932 (881) 17.9%	4211 (304) 44.6%	43936 (3242) 8.6%	964810 (89901) 8.7%	1888342 (191897) 19.2%	6961001 (368788) 55.8%	9814154 (480145) 29.4%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.



**FIGURE III - 72**  
**PULMONARY TESTS PROVIDED TO ALL OR SELECTED WORKERS**  
 (NOES 1981-1983)



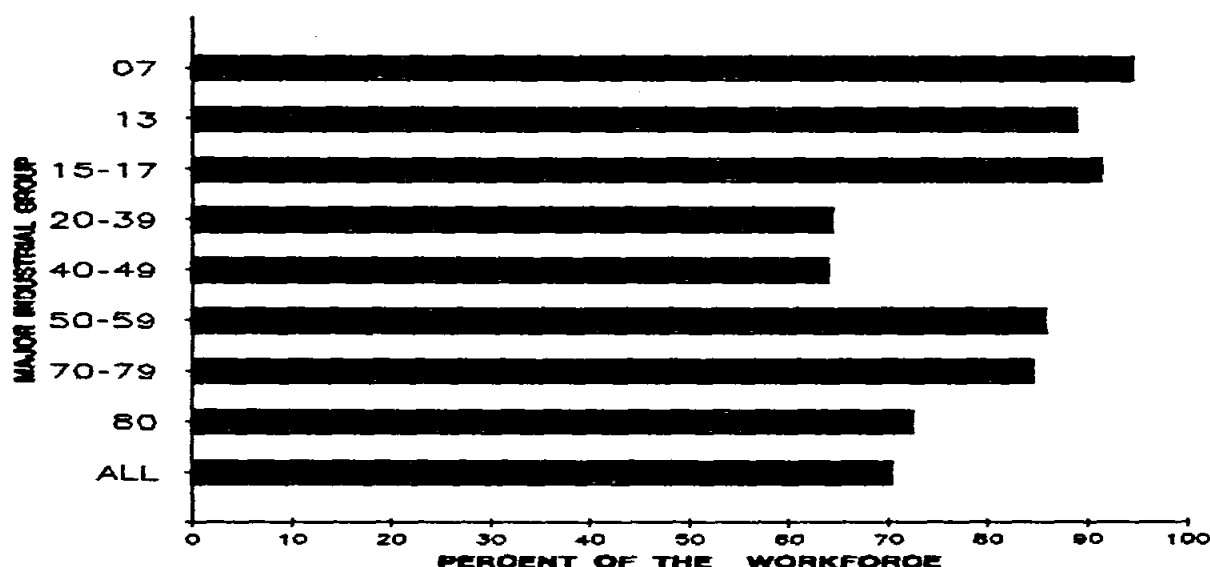
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
PROVIDE PULMONARY TESTS TO ALL OR SELECTED WORKERS

SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	144* (138) 2.6%	...	...	144* (138) 2.6%	5758* (5510) 5.6%	...	...	5758* (5510) 5.2%
13	269* (159) 3.1%	...	46* (52) 100.0%	316* (159) 3.3%	13234* (7284) 6.3%	...	31383* (35291) 100.0%	44616* (33862) 10.8%
15	564* (396) 2.3%	342* (202) 30.9%	67* (93) 49.8%	973* (464) 3.7%	10427* (7521) 1.9%	58282* (27454) 29.4%	72404* (63356) 53.7%	141113* (69464) 15.8%
16	527* (250) 4.7%	103* (73) 9.2%	49* (43) 46.2%	679* (272) 5.4%	10300* (5069) 3.6%	14975* (10754) 7.2%	53081* (40215) 52.4%	78356* (41412) 13.2%
17	869* (556) 1.5%	123* (106) 6.4%	...	992* (553) 1.7%	25581* (15943) 2.0%	14369* (12505) 4.3%	...	39950* (19011) 2.5%
20	1002* (329) 8.8%	639* (237) 19.9%	155* (66) 27.7%	1796* (447) 11.8%	41374* (17606) 10.7%	141045* (53547) 20.9%	159710* (71028) 32.5%	342129* (69536) 22.0%
21	4* (6) 14.6%	...	14* (28) 17.5%	18* (25) 16.7%	258* (345) 13.8%	...	19407* (32122) 17.3%	19665* (31898) 17.3%
22	34* (47) 1.2%	306* (117) 19.3%	247* (83) 82.5%	587* (146) 12.2%	3324* (4571) 3.7%	87699* (34637) 25.3%	221348* (99372) 84.8%	312372* (98879) 43.7%
23	100* (101) .8%	33* (35) 1.1%	58* (43) 24.1%	191* (109) 1.2%	4586* (4632) 1.1%	9429* (9805) 1.5%	76627* (48463) 36.8%	90642* (48099) 7.3%
24	480* (258) 4.5%	219* (133) 19.1%	19* (8) 18.1%	717* (306) 6.0%	25632* (15044) 8.4%	31741* (19764) 17.3%	35767* (18789) 38.7%	93140* (32871) 16.1%
25	172* (125) 4.1%	197* (99) 18.6%	21* (17) 17.4%	390* (190) 7.3%	6944* (5416) 5.0%	45184* (22705) 17.6%	36223* (28020) 29.4%	88351* (39568) 17.0%
26	241* (146) 5.9%	314* (127) 20.0%	144* (81) 67.1%	698* (250) 11.8%	12442* (7815) 9.0%	52195* (19109) 18.5%	157510* (70364) 76.1%	222147* (80053) 35.5%
27	947* (476) 5.2%	87* (71) 4.6%	104* (64) 33.0%	1138* (485) 5.6%	22803* (10483) 4.8%	12502* (9958) 3.5%	120100* (53317) 34.7%	155404* (53679) 13.1%
28	1467 (347) 23.8%	718 (119) 61.9%	246* (79) 64.8%	2431 (433) 31.5%	62976 (10340) 34.8%	189526 (30928) 72.7%	385534* (111053) 80.9%	638036 (117114) 69.5%
29	...	198* (123) 67.6%	101* (42) 100.0%	299* (140) 21.3%	...	42341* (17767) 66.9%	117545* (70259) 100.0%	159886* (75469) 72.1%
30	187* (102) 2.8%	188* (113) 12.2%	130* (66) 58.0%	505* (175) 6.0%	11453* (6324) 5.1%	35740* (21408) 12.1%	150310* (65089) 64.3%	197502* (65800) 26.2%
31	...	...	...	...	...	...	...	...
32	1082* (499) 12.3%	359* (117) 35.5%	100* (48) 54.6%	1542* (506) 15.4%	37382* (16376) 15.8%	66326* (23840) 31.7%	70406* (40049) 54.6%	174114* (46595) 30.3%
33	717* (240) 17.3%	336* (198) 22.9%	274 (57) 81.4%	1327 (297) 22.3%	34427* (11061) 24.9%	79510* (35396) 25.6%	539564 (67191) 86.8%	653501 (78356) 61.0%

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	2050* (540) 11.1%	455* (118) 14.6%	167* (54) 48.2%	2671 (578) 12.1%	62484* (16640) 11.3%	93309* (29332) 15.6%	188391* (71096) 53.7%	344183 (84411) 22.9%
35	506* (223) 2.2%	462* (132) 13.6%	323 (73) 41.2%	1291 (318) 4.8%	20462* (8302) 3.4%	111412 (27244) 16.9%	644951 (114130) 58.0%	776824 (117183) 32.6%
36	377* (340) 5.3%	435* (124) 16.2%	395 (96) 50.2%	1207* (399) 11.4%	6285* (5098) 2.7%	82457* (27403) 14.9%	802845 (165478) 67.9%	891587 (179448) 45.4%
37	398* (259) 10.0%	70* (45) 5.9%	320* (86) 76.8%	788* (275) 14.1%	27077* (17354) 21.3%	19198* (13329) 8.0%	1316345 (248149) 86.9%	1362619 (246559) 72.5%
38	55* (57) 2.1%	235* (96) 24.5%	159* (88) 38.3%	449* (135) 11.1%	4527* (4673) 4.3%	39591* (16434) 20.4%	218899* (107039) 47.5%	263017* (103958) 34.6%
39	298* (197) 4.5%	124* (291) 15.6%	...	422* (349) 5.5%	8399* (5825) 5.1%	30069* (76279) 20.1%	...	38468* (76771) 7.3%
41	980* (314) 22.2%	180* (66) 35.3%	...	1160* (318) 23.5%	37309* (11498) 31.7%	34456* (26114) 42.3%	...	71765* (27126) 36.0%
42	7016 (1296) 35.0%	804* (234) 54.2%	45* (36) 54.9%	7865 (1342) 36.4%	183216 (35260) 37.6%	137143* (37123) 53.0%	38465* (22793) 51.4%	358824 (49084) 43.7%
45	440* (364) 13.6%	...	115* (47) 78.1%	555* (369) 14.0%	10495* (7675) 13.5%	...	221267* (76829) 83.7%	231762* (77230) 51.4%
48	751* (722) 5.1%	88* (81) 9.7%	19* (16) 56.8%	858* (717) 5.5%	16143* (14712) 3.8%	18455* (17704) 10.5%	37029* (29526) 52.8%	71627* (45165) 10.7%
49	1124* (684) 13.7%	763* (275) 41.0%	89* (74) 51.5%	1977* (798) 19.3%	58566* (34571) 21.7%	189897* (73060) 44.6%	104805* (55062) 71.5%	353269* (110337) 42.0%
50	2944* (989) 9.7%	167* (125) 9.2%	...	3111* (997) 9.7%	90175* (27881) 14.3%	50155* (37774) 17.7%	...	140329* (48724) 15.4%
51	2735* (840) 30.0%	237* (237) 100.0%	...	2972* (906) 31.8%	47759* (14744) 25.8%	27013* (27013) 100.0%	...	74771* (34365) 35.3%
55	...	...	...	...	...	...	...	...
72	216* (241) 1.0%	...	...	216* (241) 1.0%	8211* (9165) 2.2%	...	...	8211* (9165) 1.7%
73	1139* (792) 6.9%	269* (109) 18.0%	172* (112) 50.5%	1580* (794) 8.6%	27295* (21013) 6.5%	73373* (25325) 21.0%	200873* (102687) 61.1%	301541* (105463) 27.4%
75	216* (192) .8%	...	...	216* (192) .8%	10788* (9611) 2.6%	...	...	10788* (9611) 2.6%
76	9* (8) .1%	36* (45) 29.4%	...	45* (45) .5%	483* (423) .3%	12672* (15755) 52.1%	...	13156* (15699) 6.5%
80	95* (74) 3.3%	244* (85) 11.3%	631 (131) 30.6%	970 (118) 13.7%	4724* (3644) 4.6%	54636* (22591) 10.2%	940213 (180997) 31.1%	999573 (173055) 27.3%
All	30155 (3291) 6.8%	8729 (671) 17.6%	4211 (355) 44.7%	43096 (3510) 8.5%	953297 (99468) 8.6%	1854699 (128216) 19.0%	6961001 (399542) 55.9%	9768997 (455744) 29.4%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
...No facilities observed.

**FIGURE III - 73**  
**PULMONARY TESTS NOT PROVIDED OR FOR MANAGEMENT ONLY**  
**(NOES 1981-1983)**



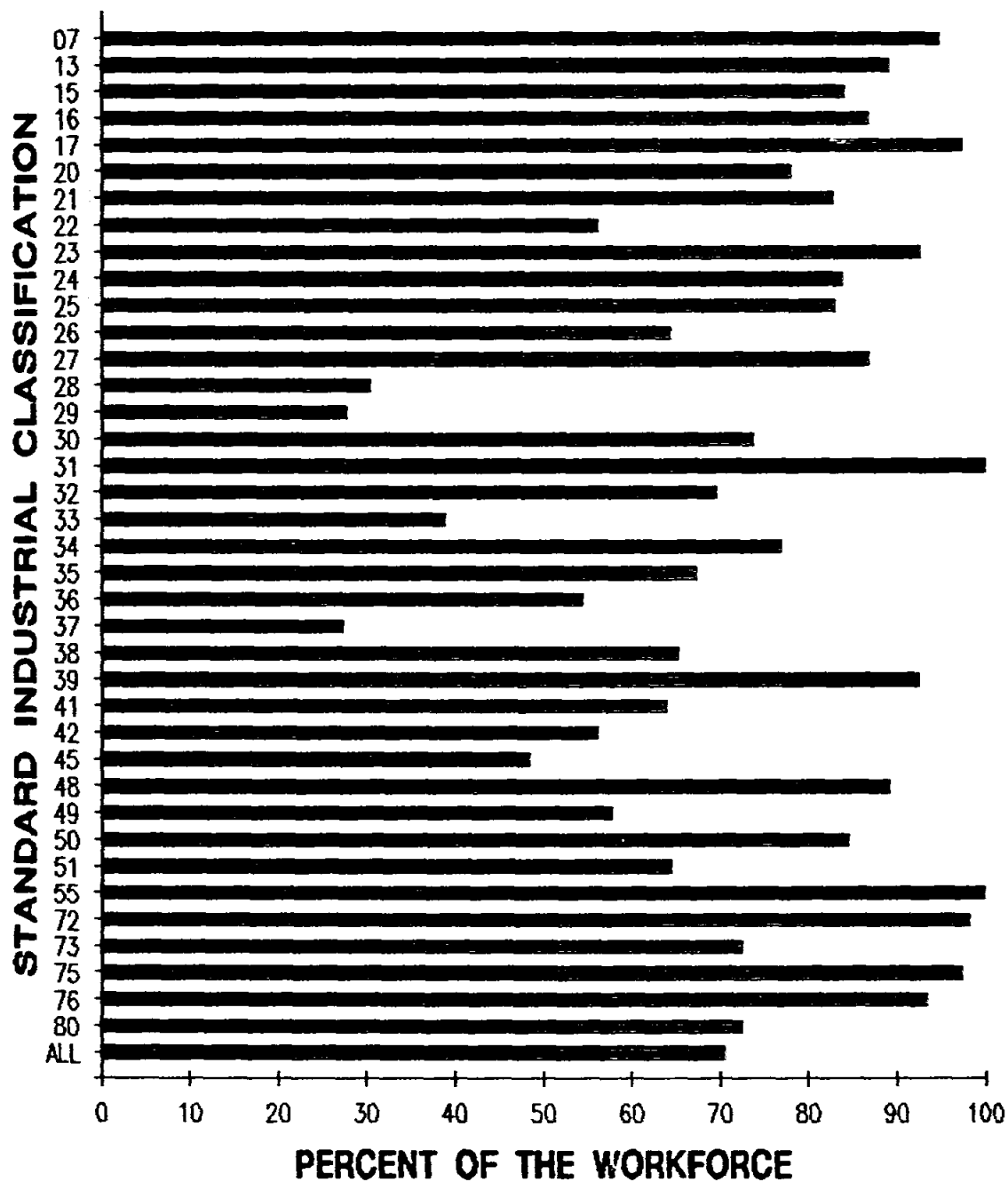
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-63

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 PROVIDE NO PULMONARY TESTS OR EXAMINE MANAGEMENT ONLY

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	5419* (1542) 97.4%	70* (67) 100.0%	...	5490* (1529) 97.5%	97924* (29580) 94.4%	7009* (6680) 100.0%	...	104934* (29294) 94.8%
13	8328 (1950) 96.9%	1019* (331) 100.0%	...	9347 (2115) 96.7%	195724 (41324) 93.7%	173943* (58021) 100.0%	...	369667 (84835) 89.2%
15-17	92373 (2414) 97.9%	3577 (460) 86.3%	126* (59) 51.9%	96076 (2493) 97.3%	2052585 (21763) 97.8%	649473 (93521) 88.1%	110572* (51664) 46.8%	2812630 (96147) 91.6%
20-39	143126 (3050) 93.4%	26380 (1629) 83.1%	3292 (202) 52.5%	172799 (3909) 90.3%	4222862 (74150) 91.5%	5211540 (292279) 81.7%	3003839 (159971) 36.3%	12438241 (377162) 64.6%
40-49	42203 (2538) 79.4%	3806 (824) 65.1%	200* (82) 42.7%	46209 (2899) 77.7%	1116627 (84788) 77.9%	739720 (183190) 64.1%	172177* (68072) 30.0%	2028523 (223951) 64.2%
50-59	52712 (3619) 90.3%	2255* (598) 84.8%	...	54968 (3804) 90.0%	986441 (79468) 87.7%	331659* (91146) 81.1%	...	1318100 (130803) 86.0%
70-79	71554 (3813) 97.8%	2042 (318) 87.0%	182* (80) 51.5%	73778 (3778) 97.3%	1346396 (69660) 96.6%	378467 (55074) 81.5%	138687* (58219) 40.8%	1863550 (99148) 84.8%
80	2744* (834) 96.7%	1922 (268) 88.7%	1430 (230) 69.4%	6096 (797) 86.3%	96921 (22723) 95.4%	479849 (69146) 89.8%	2082463 (304609) 68.9%	2659232 (302022) 72.7%
ALL	418460 (7489) 93.1%	41071 (2047) 82.1%	5230 (332) 55.4%	464761 (8130) 91.4%	10115480 (165613) 91.3%	7971660 (383751) 80.8%	5507738 (359263) 44.2%	23594877 (572592) 70.6%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE III - 74**  
**PULMONARY TESTS NOT PROVIDED OR FOR MANAGEMENT ONLY**  
**(NOES 1981-1983)**



NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
PROVIDE NO PULMONARY TESTS OR EXAMINE MANAGEMENT ONLY

SIC CODE	PLANTS			TOTAL	EMPLOYEES			TOTAL
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)		SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	
07	5419* (1542) 97.4%	70* (67) 100.0%	...	5490* (1529) 97.5%	97924* (29580) 94.4%	7009* (6680) 100.0%	...	104934* (29294) 94.8%
13	8328 (1950) 96.9%	1019* (331) 100.0%	...	9347 (2115) 96.7%	195724 (41324) 93.7%	173943* (58021) 100.0%	...	369667 (84835) 89.2%
15	24352 (1678) 97.7%	766 (188) 69.2%	68* (30) 50.3%	25185 (1688) 96.3%	552462 (43062) 98.1%	139936* (36675) 70.6%	62395* (30350) 46.3%	754793 (65834) 84.2%
16	10758 (1527) 95.3%	1016 (189) 90.8%	58* (43) 54.0%	11832 (1521) 94.6%	273789 (47129) 96.4%	192784 (41809) 92.8%	48177* (32445) 47.6%	514750 (76999) 86.8%
17	57263 (1732) 98.5%	1795 (411) 93.6%	...	59059 (1835) 98.3%	1226334 (36949) 98.0%	316753* (81615) 95.7%	...	1543087 (90011) 97.5%
20	10410 (728) 91.2%	2577 (328) 80.1%	405 (88) 72.4%	13391 (88) 88.2%	347064 (18413) 89.3%	532735 (83655) 79.1%	332065 (69127) 67.5%	1211865 (103880) 78.0%
21	26* (42) 86.5%	...	65* (47) 82.0%	91* (58) 83.3%	1608* (2605) 86.2%	...	92726* (63929) 82.7%	94334* (63432) 82.8%
22	2897 (392) 98.8%	1283 (190) 80.8%	52* (22) 17.4%	4232 (410) 87.8%	102708 (6888) 96.9%	259374 (36669) 74.7%	39745* (17611) 15.2%	401827 (48316) 56.3%
23	12414 (758) 99.2%	3069 (165) 98.9%	184* (75) 76.0%	15667 (769) 98.8%	419318 (7336) 98.9%	600493 (30442) 98.5%	131810* (60544) 63.2%	1151621 (61702) 92.7%
24	10232 (692) 95.5%	929 (149) 80.9%	85* (73) 82.1%	11246 (764) 94.0%	278014 (26632) 91.6%	151844 (24541) 82.7%	56588* (48232) 61.3%	486446 (78548) 83.9%
25	3993 (484) 95.9%	865 (150) 81.4%	98* (75) 82.2%	4955 (493) 92.7%	132165 (19884) 95.0%	211258 (40632) 82.4%	86775* (64261) 70.6%	430198 (79956) 83.0%
26	3872 (745) 94.1%	1255 (239) 80.0%	71* (77) 33.0%	5197 (767) 88.1%	125212 (16612) 91.0%	229280 (48050) 81.5%	49354* (49226) 23.9%	403847 (69835) 64.5%
27	17171 (1164) 94.8%	1786 (180) 95.4%	212* (91) 67.1%	19169 (1163) 94.4%	455328 (15463) 95.2%	348400 (48015) 96.5%	225651* (65739) 65.3%	1029379 (97069) 86.9%
28	4706 (413) 76.2%	443* (125) 38.2%	134* (68) 35.2%	5282 (412) 68.5%	117763 (9942) 65.2%	71305* (23458) 27.3%	90806* (45573) 19.1%	279874 (47194) 30.5%
29	1011* (404) 100.0%	95* (65) 32.6%	...	1106* (400) 78.7%	40980* (17325) 100.0%	20915* (15663) 33.1%	...	61895* (21450) 27.9%
30	6524 (1153) 97.2%	1349* (466) 87.8%	94* (44) 41.9%	7966 (1365) 94.0%	213551 (27091) 94.9%	258790* (96321) 87.9%	83337* (38316) 35.7%	555678 (99570) 73.8%
31	931* (343) 100.0%	569 (131) 100.0%	25* (24) 100.0%	1525 (372) 100.0%	24888* (7207) 100.0%	135459* (34334) 100.0%	15664* (16901) 100.0%	176011 (38675) 100.0%
32	7716 (1212) 87.7%	653 (131) 64.5%	83* (51) 45.3%	8452 (1253) 84.6%	199778 (20702) 84.2%	142658 (30880) 68.3%	58587* (35777) 45.4%	401023 (42801) 69.7%
33	3418 (555) 82.7%	1132 (204) 77.1%	63* (32) 18.6%	4613 (564) 77.7%	104041 (17632) 75.1%	231571 (42189) 74.4%	81935* (34892) 13.2%	417547 (47335) 39.0%

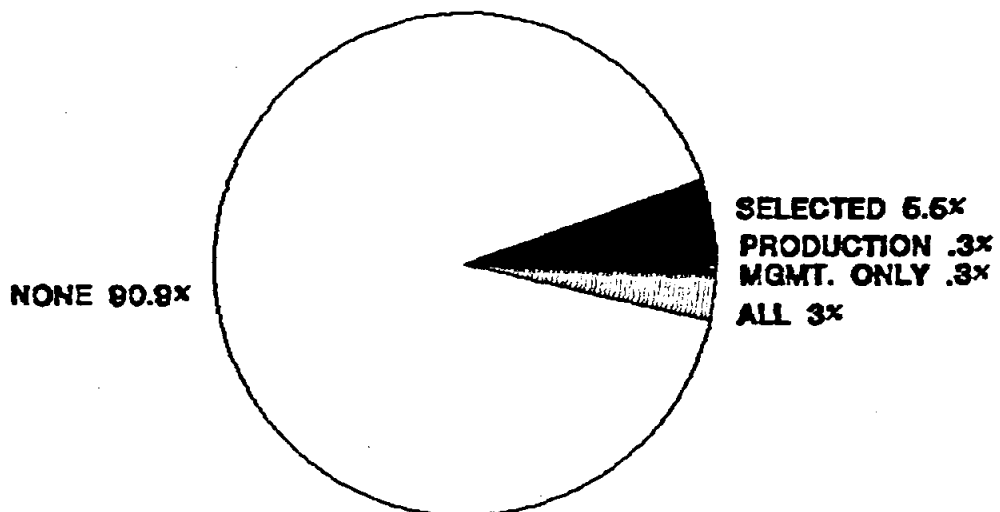
## NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983)

## TABLE NO. III-64 (CONTINUED)

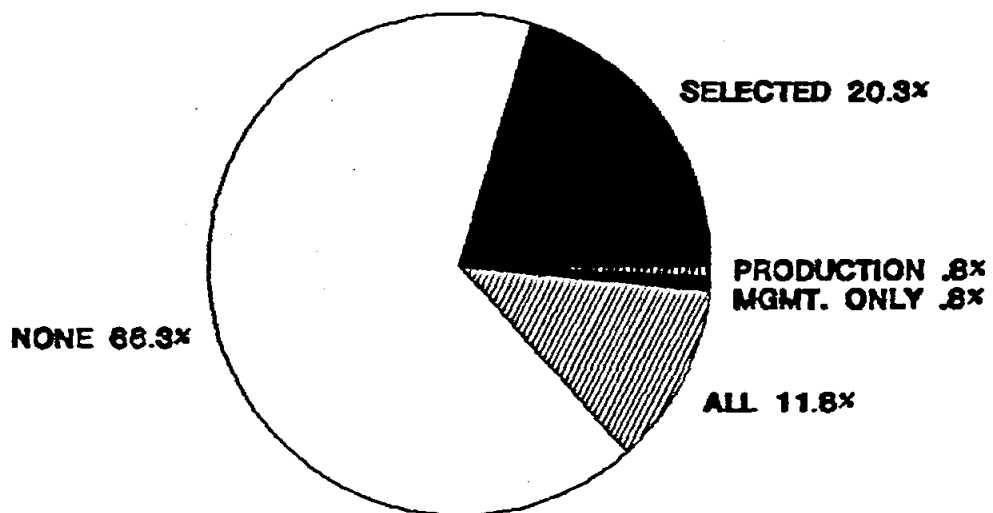
SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	16471 (1252) 88.9%	2667 (205) 85.4%	179* (76) 51.6%	19317 (1250) 87.9%	492402 (21581) 88.7%	503376 (36569) 84.4%	162665* (73351) 46.3%	1158442 (86275) 77.1%
35	22144 (1046) 97.8%	2943 (171) 86.4%	461 (70) 58.8%	25548 (1137) 95.2%	586338 (8297) 96.6%	549708 (27242) 83.1%	467983 (85587) 42.0%	1604029 (97746) 67.4%
36	6727 (488) 94.7%	2250 (182) 83.8%	392* (143) 49.8%	9369 (506) 88.6%	224204 (11280) 97.3%	470205 (27432) 85.1%	379617* (117013) 32.1%	1074025 (119905) 54.6%
37	3575 (837) 90.0%	1120 (113) 94.1%	96* (34) 23.1%	4791 (811) 85.9%	99945 (17384) 78.7%	219986 (30290) 92.0%	197664 (45407) 13.1%	517595 (52083) 27.5%
38	2634 (517) 98.0%	722 (103) 75.4%	256* (126) 61.6%	3612 (580) 88.9%	100075 (13962) 95.7%	154802 (26701) 79.6%	241498* (119706) 52.5%	496375* (125451) 65.4%
39	6256 (568) 95.5%	674* (1222) 84.4%	338* (216) 100.0%	7268 (1302) 94.5%	157478 (13498) 94.9%	119380* (207153) 79.9%	209369* (120490) 100.0%	486228* (203998) 92.7%
41	3440* (942) 77.8%	330* (158) 64.6%	...	3769* (1003) 76.5%	80324* (22467) 68.3%	47086* (22324) 57.7%	...	127409* (39902) 64.0%
42	13011 (1720) 65.0%	678* (214) 45.8%	37* (34) 44.6%	13726 (1743) 63.6%	304586 (41092) 62.4%	121679* (36209) 47.0%	36365* (40839) 48.6%	462630 (60716) 56.3%
45	2801* (770) 86.4%	590* (397) 99.9%	33* (38) 22.3%	3423* (968) 86.1%	67001* (17533) 86.5%	109332* (75829) 100.0%	42988* (35767) 16.3%	219321* (86597) 48.6%
48	13951 (2124) 94.9%	814 (168) 90.2%	14* (12) 42.3%	14779 (2177) 94.5%	409615 (82753) 96.2%	157867 (37866) 89.5%	33054* (28615) 47.2%	600536 (92420) 89.3%
49	7091 (1631) 86.3%	1099* (417) 59.0%	84* (61) 48.3%	8274 (1791) 80.7%	210804 (46857) 78.3%	235573* (121399) 55.4%	41760* (30428) 28.5%	488136* (149025) 58.0%
50	27405 (2419) 90.3%	1636* (434) 90.8%	...	29041 (2494) 90.3%	540130 (60552) 85.7%	233084* (62255) 82.3%	...	773214 (99216) 84.6%
51	6379 (1205) 70.0%	...	...	6379 (1205) 68.2%	137266* (38814) 74.2%	...	...	137266* (38814) 64.7%
55	18928 (3032) 100.0%	620* (491) 99.9%	...	19548 (3239) 100.0%	309045 (54796) 100.0%	98575* (80174) 100.0%	...	407620* (110347) 100.0%
72	20413 (2485) 99.0%	675* (190) 100.0%	13* (19) 100.0%	21102 (2536) 99.0%	371808 (52648) 97.8%	82220* (24190) 100.0%	10670* (15114) 100.0%	464699 (65026) 98.3%
73	15435 (1682) 93.1%	1220 (217) 81.9%	169* (69) 49.5%	16824 (1591) 91.4%	394152 (38516) 93.5%	276340 (46118) 79.0%	128017* (50410) 38.9%	798509 (71780) 72.6%
75	25964 (3887) 99.2%	59* (60) 99.7%	...	26023 (3892) 99.2%	402487 (62726) 97.4%	8238* (8380) 100.0%	...	410725 (63159) 97.4%
76	9742 (2197) 99.9%	87* (78) 70.8%	...	9829 (2202) 99.5%	177949 (29886) 99.7%	11669* (10488) 47.9%	...	189617 (32911) 93.5%
80	2744* (834) 96.7%	1922 (268) 88.7%	1430 (230) 69.4%	6096 (797) 86.3%	96921 (22723) 95.4%	479849 (69146) 89.8%	2082463 (304609) 68.9%	2659232 (302022) 72.7%
All	416550 (7221) 93.2%	40823 (746) 82.4%	5214 (304) 55.3%	462587 (7380) 91.5%	10071183 (107787) 91.4%	7919083 (127762) 81.0%	5498733 (350319) 44.1%	23488999 (412036) 70.6%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE III - 75**  
**PROVISION OF PULMONARY TESTS**  
**(NOES 1981-1983)**



**PLANTS**



**WORKERS**



(see text on questionnaire item 22 for definitions and notes)

<b>Chest X-rays</b>	<u><b>1</b></u>	<u><b>2</b></u>	<u><b>3</b></u>	<u><b>4</b></u>	<u><b>5</b></u>
---------------------	-----------------	-----------------	-----------------	-----------------	-----------------

**Three analyses of the responses to the chest x-ray sub-item are presented.**

- The estimates of the plants which provide chest x-rays to all workers, production workers or selected workers, and workers in those plants (by number and proportion of the totals) are displayed in Figures III-76 and III-77, and Tables III-65 and III-66.

**Table III-66**      **Number and percent of plants and employees in plants which provide chest x-rays to all or selected workers (by 2-digit SIC)**

- The estimates of plants which either do not provide chest x-rays or provide them only to management personnel, and workers in those plants (by number and proportion of the totals) are displayed in Figures III-78 and III-79, and Tables III-67 and III-68.

**Table III-68**      Number and percent of plants and employees in plants which provide no chest x-rays or examine management only (by 2-digit SIC)

**(3) Response 1, 2, 3, 4, or 5 - Provision of chest x-rays**

**The estimated proportions of plants and workers in those plants corresponding to each of the five possible responses to the chest x-ray inquiry are presented in Figure III-80.**

**Figure III-80      Provision of chest x-rays**

**FIGURE III - 76**  
**CHEST X-RAYS PROVIDED TO ALL OR SELECTED WORKERS**  
**(NOES 1981-1983)**



NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-65

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 PROVIDE CHEST X-RAYS TO ALL OR SELECTED WORKERS

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	144* (138) 2.6%	...	...	144* (138) 2.6%	5758* (5510) 5.6%	...	...	5758* (5510) 5.2%
13	269* (159) 3.1%	58* (57) 5.7%	46* (52) 100.0%	374* (157) 3.9%	13234* (7284) 6.3%	9648* (9529) 5.5%	31383* (35291) 100.0%	54264* (34473) 13.1%
15-17	1736* (486) 1.8%	775* (259) 18.7%	58* (44) 23.9%	2568 (581) 2.6%	47532* (15892) 2.3%	122947* (38665) 16.7%	86006* (50755) 36.4%	256485* (67814) 8.3%
20-39	9292 (1501) 6.1%	5314 (796) 16.7%	2803 (195) 44.7%	17410 (1760) 9.1%	346471 (43831) 7.5%	1122893 (198287) 17.6%	5149233 (281013) 62.3%	6618597 (424610) 34.4%
40-49	9379 (1598) 17.6%	1722 (362) 29.5%	190* (108) 40.7%	11291 (1681) 19.0%	250762 (41117) 17.5%	352785 (86877) 30.6%	291508* (89993) 50.8%	895055 (131349) 28.3%
50-59	5115 (1184) 8.8%	381* (256) 14.3%	...	5495 (1189) 9.0%	128798 (28353) 11.5%	70489* (46886) 17.2%	...	199287* (54376) 13.0%
70-79	2852* (1014) 3.9%	323* (104) 13.8%	136* (103) 38.5%	3312* (983) 4.4%	60653* (24514) 4.4%	87430* (25031) 18.8%	173074* (97756) 51.0%	321158* (99817) 14.6%
80	1201* (562) 42.3%	1415 (205) 65.3%	1683 (249) 81.7%	4299 (791) 60.8%	41074* (15981) 40.4%	334909 (51626) 62.7%	2463004 (303676) 81.5%	2838986 (326515) 77.6%
ALL	29988 (2799) 6.7%	9988 (977) 20.0%	4917 (357) 52.1%	44893 (3051) 8.8%	894282 (74886) 8.1%	2101101 (232252) 21.3%	8194208 (438935) 65.7%	11189591 (568240) 33.5%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

## NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-66

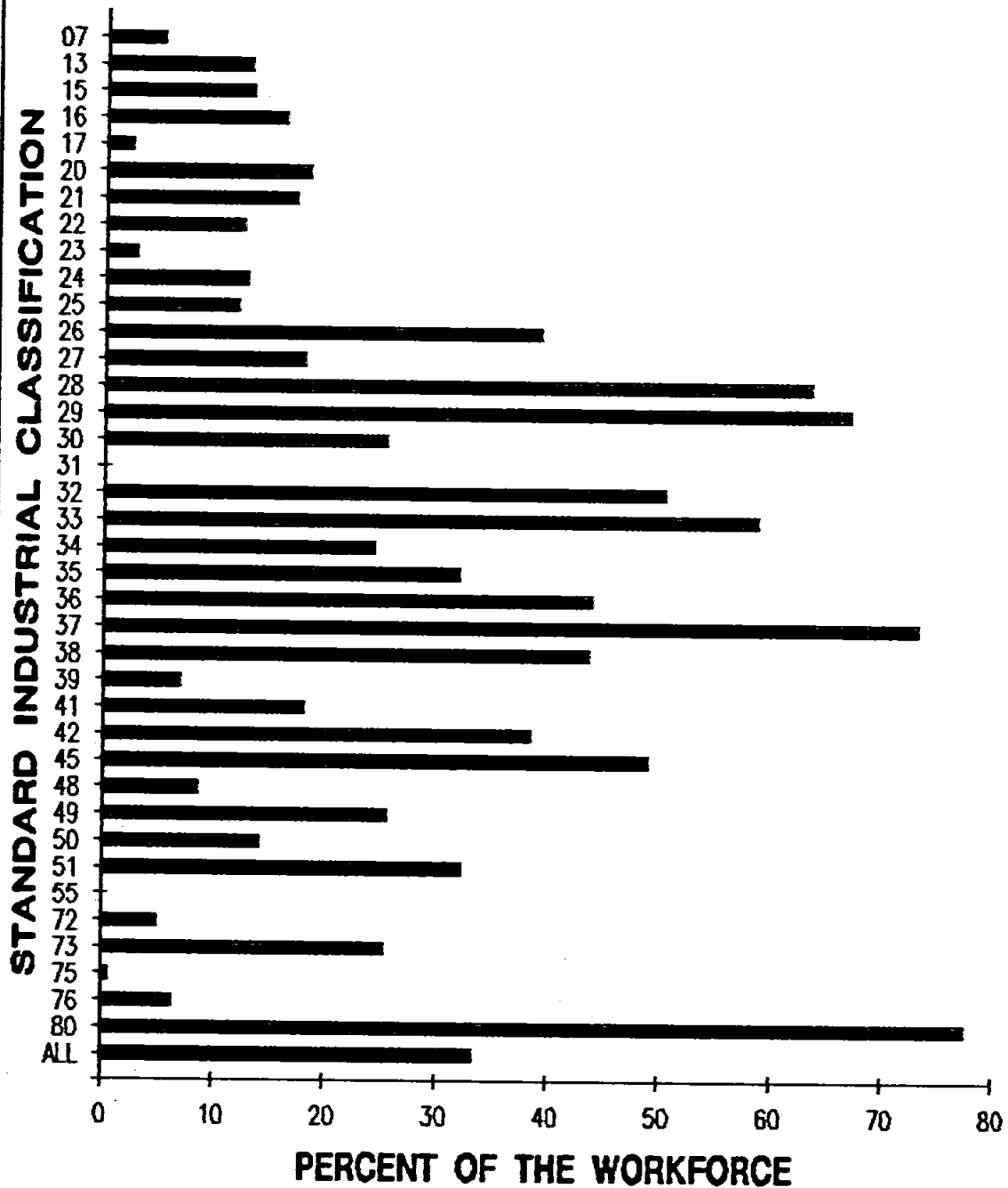
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
PROVIDE CHEST X-RAYS TO ALL OR SELECTED WORKERS

SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	144* (138) 2.6%	...	...	144* (138) 2.6%	5758* (5510) 5.6%	...	...	5758* (5510) 5.2%
13	269* (159) 3.1%	58* (57) 5.7%	46* (52) 100.0%	374* (157) 3.9%	13234* (7284) 6.3%	9648* (9529) 5.5%	31383* (35291) 100.0%	54264* (34473) 13.1%
15	331* (330) 1.3%	451* (205) 40.7%	8* (5) 6.2%	791* (386) 3.0%	2982* (2967) .5%	83811* (33788) 42.3%	32925* (20856) 24.4%	119717* (43427) 13.4%
16	949* (501) 8.4%	201* (131) 17.9%	49* (43) 46.2%	1199* (524) 9.6%	19088* (10662) 6.7%	24767* (14952) 11.9%	53081* (40215) 52.4%	96936* (42073) 16.3%
17	456* (277) .8%	123* (106) 6.4%	...	579* (289) 1.0%	25463* (16499) 2.0%	14369* (12505) 4.3%	...	39832* (20393) 2.5%
20	1258* (405) 11.0%	645* (188) 20.1%	89* (47) 16.0%	1993* (450) 13.1%	46341* (17895) 11.9%	127641* (47114) 18.9%	111203* (62548) 22.6%	285185* (77722) 18.4%
21	4* (6) 14.6%	...	14* (28) 17.5%	18* (25) 16.7%	258* (345) 13.8%	...	19407* (32122) 17.3%	19665* (31898) 17.3%
22	...	79* (59) 5.0%	96* (60) 32.0%	175* (102) 3.6%	...	23950* (16912) 6.9%	66263* (41203) 25.4%	90213* (53499) 12.6%
23	100* (101) .8%	11* (18) .4%	11* (8) 4.7%	122* (100) .8%	4586* (4632) 1.1%	2200* (3662) .4%	29565* (21706) 14.2%	36351* (19765) 2.9%
24	396* (238) 3.7%	132* (112) 11.5%	19* (8) 18.1%	547* (241) 4.6%	21796* (14528) 7.2%	17464* (17308) 9.5%	35767* (18789) 38.7%	75027* (24189) 12.9%
25	172* (125) 4.1%	171* (97) 16.1%	3* (4) 2.7%	346* (169) 6.5%	6944* (5416) 5.0%	34909* (19493) 13.6%	20917* (22806) 17.0%	62770* (36208) 12.1%
26	227* (171) 5.5%	314* (127) 20.0%	178* (70) 83.0%	719* (231) 12.2%	14492* (11960) 10.5%	52195* (19109) 18.5%	179517* (62131) 86.8%	246204* (65061) 39.3%
27	1078* (412) 6.0%	112* (103) 6.0%	136* (66) 43.2%	1327* (410) 6.5%	26881* (7628) 5.6%	22111* (24653) 6.1%	164966* (56360) 47.7%	213957* (54835) 18.1%
28	1479* (397) 24.0%	621 (115) 53.5%	243* (83) 63.8%	2342 (459) 30.4%	57663 (11579) 31.9%	157333 (29154) 60.3%	368400* (107420) 77.3%	583395 (109281) 63.6%
29	...	163* (117) 55.8%	101* (42) 100.0%	265* (135) 18.8%	...	31271* (14210) 49.4%	117545* (70259) 100.0%	148816* (75658) 67.1%
30	146* (86) 2.2%	154* (106) 10.0%	130* (66) 58.0%	429* (153) 5.1%	8771* (5130) 3.9%	33218* (22130) 11.3%	150310* (65089) 64.3%	192299* (66496) 25.5%
31	...	...	...	...	...	...	...	...
32	1243* (444) 14.1%	479* (175) 47.4%	184* (71) 99.9%	1906 (436) 19.1%	49478* (15770) 20.9%	112033* (41197) 53.6%	128993* (49687) 100.0%	290504 (58518) 50.5%
33	415* (233) 10.0%	498* (152) 33.9%	224 (48) 66.6%	1138* (292) 19.2%	18071* (9322) 13.1%	109443* (29599) 35.2%	502806 (91336) 80.9%	630320 (97412) 58.9%

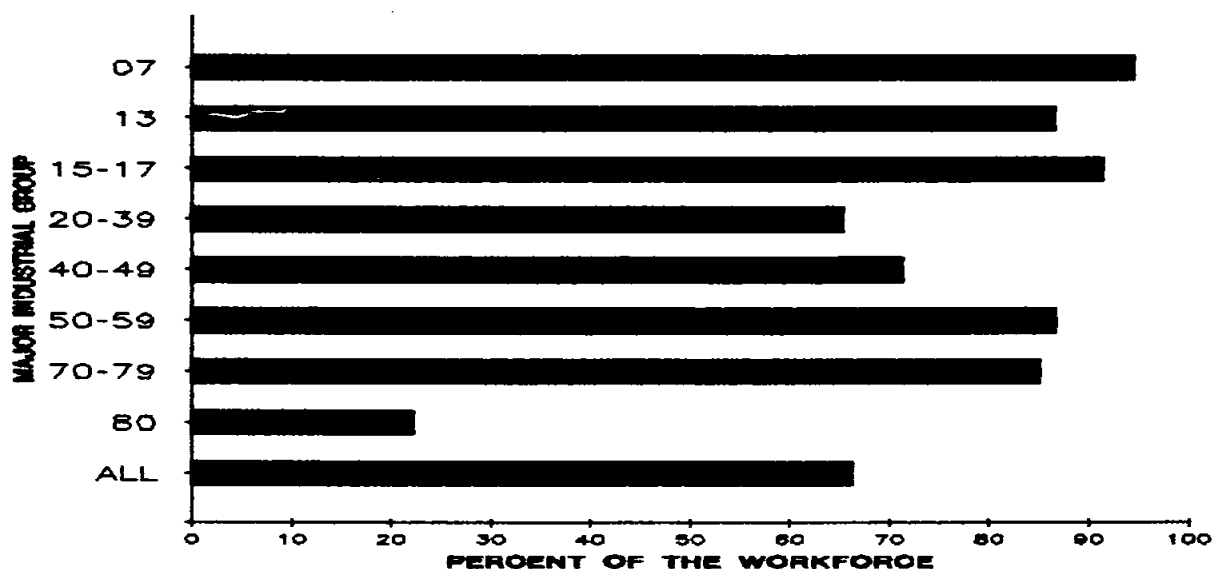
SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	1837* (523) 9.9%	533 (113) 17.1%	170* (78) 49.3%	2540 (568) 11.6%	54867* (14979) 9.9%	104483 (19059) 17.5%	208224* (111525) 59.3%	367574* (116447) 24.5%
35	358* (146) 1.6%	681* (207) 20.0%	276* (82) 35.3%	1315 (301) 4.9%	16816* (7164) 2.8%	147028 (33510) 22.2%	599806 (118616) 53.9%	763650 (121132) 32.1%
36	377* (340) 5.3%	260* (138) 9.7%	385 (93) 48.9%	1022* (393) 9.7%	6285* (5098) 2.7%	47686* (30565) 8.6%	810537 (177666) 68.5%	864508 (190298) 44.0%
37	34* (75) .8%	103* (58) 8.7%	313* (80) 75.1%	449* (139) 8.1%	1954* (4362) 1.5%	27937* (17569) 11.7%	1348392 (235716) 89.1%	1378283 (239338) 73.3%
38	55* (57) 2.1%	233* (110) 24.3%	231* (100) 55.4%	518* (165) 12.8%	4527* (4673) 4.3%	41222* (20720) 21.2%	286614* (110426) 62.3%	332364* (109141) 43.8%
39	113* (89) 1.7%	127* (361) 15.9%	...	240* (379) 3.1%	6740* (5785) 4.1%	30769* (100919) 20.6%	...	37509* (101301) 7.1%
41	579* (317) 13.1%	154* (100) 30.1%	...	733* (316) 14.9%	15918* (8862) 13.5%	20277* (12952) 24.9%	...	36195* (14254) 18.2%
42	6308 (1074) 31.5%	681* (211) 46.0%	33* (34) 40.1%	7022 (1130) 32.5%	175698 (31360) 36.0%	120827* (35059) 46.7%	20252* (14613) 27.1%	316777 (49262) 38.6%
45	596* (591) 18.4%	...	93* (37) 63.5%	690* (590) 17.3%	17790* (17478) 23.0%	...	203993* (75933) 77.2%	221783* (79800) 49.2%
48	751* (722) 5.1%	88* (81) 9.7%	16* (14) 46.7%	855* (718) 5.5%	16143* (14712) 3.8%	18455* (17704) 10.5%	23804* (21666) 34.0%	58401* (39613) 8.7%
49	507* (366) 6.2%	596* (224) 32.0%	48* (75) 27.9%	1151* (462) 11.2%	13701* (8094) 5.1%	159583* (64488) 37.5%	43459* (52659) 29.7%	216743* (80548) 25.8%
50	2838* (956) 9.4%	144* (143) 8.0%	...	2982* (985) 9.3%	86987* (28622) 13.8%	43477* (43050) 15.3%	...	130464* (54804) 14.3%
51	2276* (891) 25.0%	237* (237) 100.0%	...	2513* (961) 26.9%	41811* (15325) 22.6%	27013* (27013) 100.0%	...	68823* (34906) 32.5%
55	...	...	...	...	...	...	...	...
72	1450* (788) 7.0%	...	...	1450* (788) 6.8%	24178* (14039) 6.4%	...	...	24178* (14039) 5.1%
73	1068* (762) 6.4%	287* (109) 19.3%	136* (103) 40.0%	1491* (764) 8.1%	33063* (22886) 7.8%	14757* (24742) 21.4%	173074* (97756) 52.6%	280895* (102236) 25.5%
75	325* (285) 1.2%	...	...	325* (285) 1.2%	2929* (2561) .7%	...	...	2929* (2561) .7%
76	9* (8) .1%	36* (45) 29.4%	...	45* (45) .5%	483* (423) .3%	12672* (15755) 52.1%	...	13156* (15699) 6.5%
80	1201* (562) 42.3%	1415 (205) 65.3%	1683 (249) 81.7%	4299 (791) 60.8%	41074* (15981) 40.4%	334909 (51626) 62.7%	2463004 (303676) 81.5%	2838986 (326515) 77.6%
All	29350 (3136) 6.6%	9785 (735) 19.7%	4917 (423) 52.2%	44053 (3565) 8.7%	882769 (85592) 8.0%	2067457 (163426) 21.2%	8194208 (466132) 65.8%	11144434 (561109) 33.5%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE III - 77**  
**CHEST X-RAYS PROVIDED TO ALL OR SELECTED WORKERS**  
**(NOES 1981-1983)**



**FIGURE III - 78**  
**CHEST X-RAYS NOT PROVIDED OR FOR MANAGEMENT ONLY**  
**(NOES 1981-1983)**



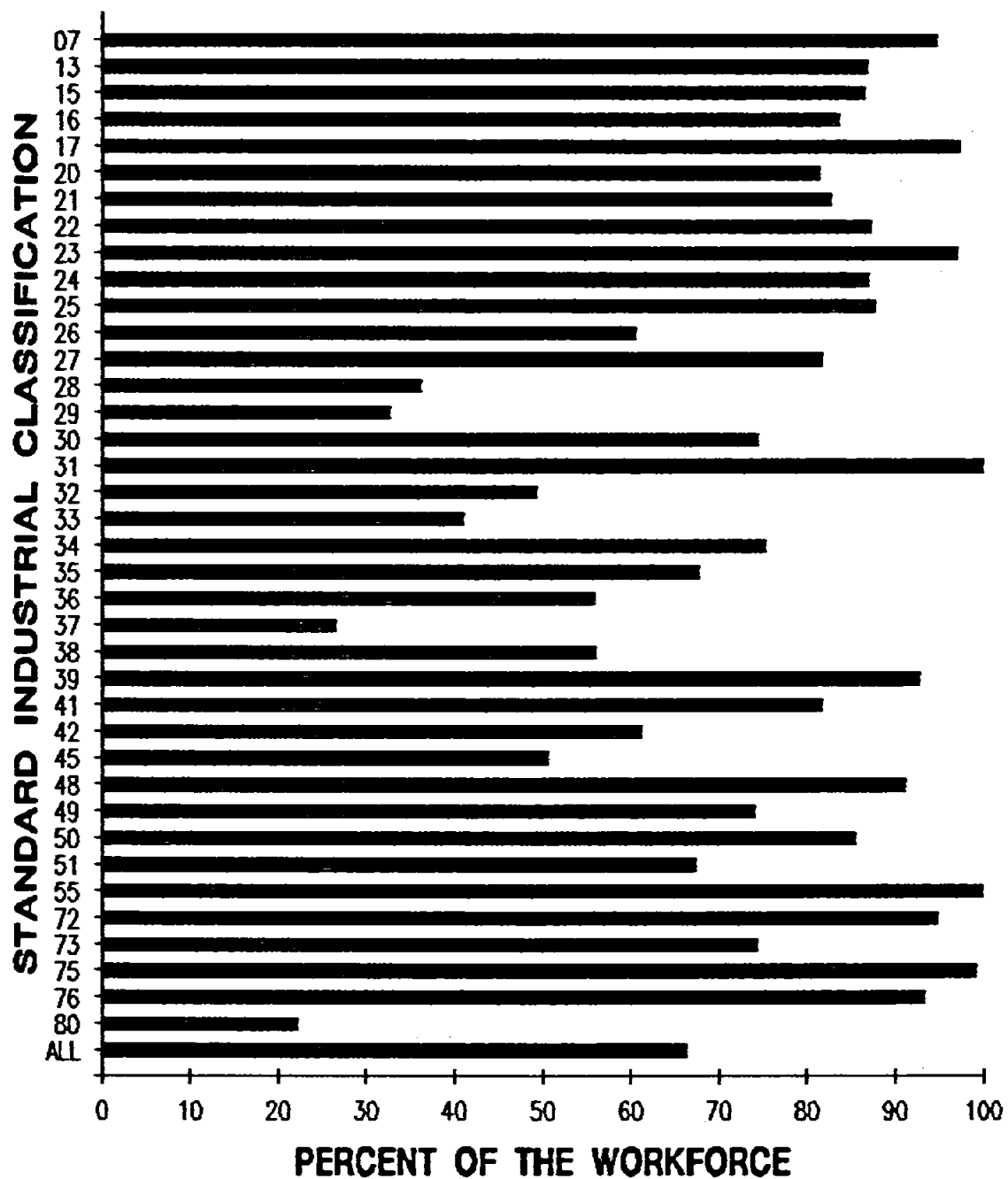
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-67

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 PROVIDE NO CHEST X-RAYS OR EXAMINE MANAGEMENT ONLY

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	5419* (1542) 97.4%	70* (67) 100.0%	...	5490* (1529) 97.5%	97924* (29580) 94.4%	7009* (6680) 100.0%	...	104934* (29294) 94.8%
13	8328 (1950) 96.9%	961* (338) 94.3%	...	9288 (2127) 96.1%	195724 (41324) 93.7%	164295* (59610) 94.5%	...	360019 (86778) 86.9%
15-17	92596 (2416) 98.2%	3370 (494) 81.3%	185* (116) 76.3%	96151 (2508) 97.4%	2051360 (22514) 97.7%	614152 (104290) 83.3%	150051* (87268) 63.6%	2815564 (125740) 91.7%
20-39	143950 (2767) 93.9%	26440 (1579) 83.3%	3467 (220) 55.3%	173856 (3612) 90.9%	4269224 (58498) 92.5%	5257920 (263293) 82.4%	3116088 (173855) 37.7%	12643231 (342273) 65.6%
40-49	43773 (2896) 82.4%	4122 (859) 70.5%	278* (84) 59.3%	48173 (3284) 81.0%	1183107 (104354) 82.5%	800529 (185335) 69.4%	282235* (78311) 49.2%	2265871 (256850) 71.7%
50-59	53277 (3737) 91.2%	2278* (596) 85.7%	...	55555 (3903) 91.0%	995577 (76922) 88.5%	338337* (90994) 82.8%	...	1333914 (127446) 87.0%
70-79	70281 (3829) 96.1%	2023 (342) 86.2%	218* (95) 61.6%	72522 (3794) 95.6%	1332521 (75011) 95.6%	377082 (61280) 81.2%	166486* (70735) 49.0%	1876089 (100313) 85.4%
80	1638* (643) 57.7%	751* (226) 34.7%	378* (106) 18.3%	2768 (628) 39.2%	60571* (21524) 59.6%	199576* (59594) 37.3%	559672 (139890) 18.5%	819819 (141331) 22.4%
ALL	419264 (7556) 93.3%	40015 (2029) 80.0%	4525 (298) 47.9%	463804 (8185) 91.2%	10186008 (171488) 91.9%	7758901 (365695) 78.7%	4274532 (261814) 34.3%	22219441 (503589) 66.5%

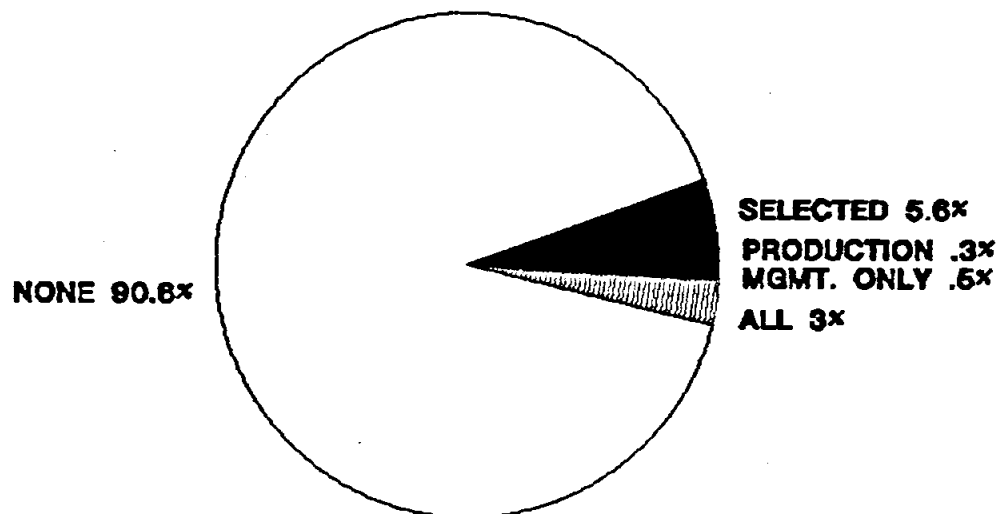
\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE III - 79**  
**CHEST X-RAYS NOT PROVIDED OR FOR MANAGEMENT ONLY**  
**(NOES 1981-1983)**

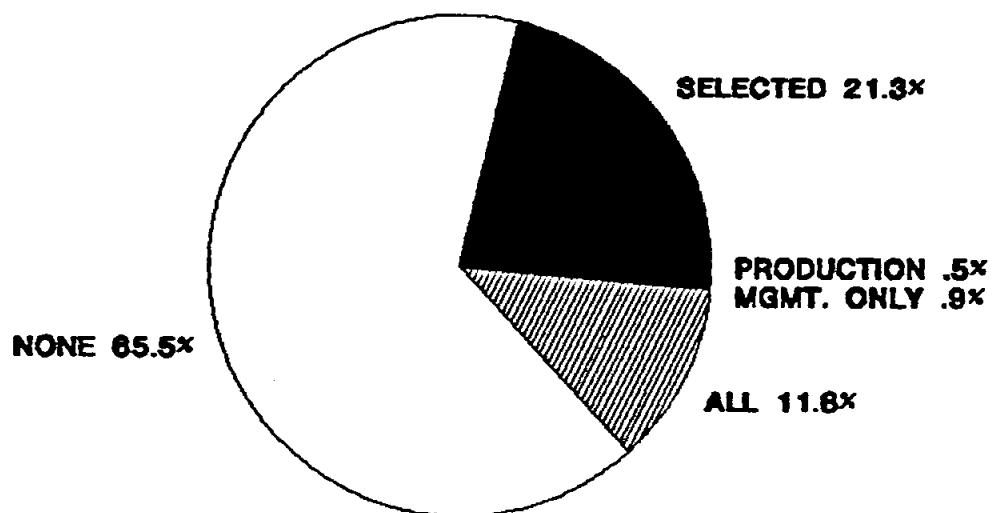




**FIGURE III - 80**  
**PROVISION OF CHEST X-RAYS**  
**(NOES 1981-1983)**



**PLANTS**



**WORKERS**

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
PROVIDE NO CHEST X-RAYS OR EXAMINE MANAGEMENT ONLY

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	5419* (1542) 97.4%	70* (67) 100.0%	...	5490* (1529) 97.5%	9792* (29580) 94.4%	7009* (6680) 100.0%	...	104934* (29294) 94.8%
13	8328 (1950) 96.9%	961* (338) 94.3%	...	9288 (2127) 96.1%	195724 (41324) 93.7%	164295* (59610) 94.5%	...	360019 (86778) 86.9%
15	24584 (1709) 98.7%	656* (167) 59.3%	127* (101) 93.9%	25367 (1704) 97.0%	559907 (44515) 99.5%	114407 (28372) 57.7%	101874* (75211) 75.6%	776188 (90905) 86.6%
16	10336 (1517) 91.6%	918 (177) 82.1%	58* (43) 54.0%	11312 (1536) 90.4%	265001 (46467) 93.3%	182992 (42164) 88.1%	48177* (32445) 47.6%	496170 (78671) 83.7%
17	57677 (1672) 99.2%	1795 (411) 93.6%	...	59472 (1761) 99.0%	1226452 (28563) 98.0%	316753* (81615) 95.7%	...	1543206 (90046) 97.5%
20	10154 (757) 89.0%	2570 (410) 79.9%	470 (101) 84.1%	13195 (904) 86.9%	342097 (18746) 88.1%	546139 (95860) 81.1%	380572 (74036) 77.4%	1268808 (101471) 81.6%
21	26* (42) 86.5%	...	65* (47) 82.0%	91* (58) 83.3%	1608* (2605) 86.2%	...	92726* (63929) 82.7%	94334* (63432) 82.8%
22	2932 (393) 100.0%	1509 (162) 95.0%	203* (81) 68.0%	4644 (384) 96.4%	106032 (5745) 100.0%	323123 (30712) 93.1%	194830* (100218) 74.6%	623985 (101171) 87.4%
23	12414 (758) 99.2%	3091 (161) 99.7%	231* (93) 95.5%	15736 (776) 99.2%	419318 (7336) 98.9%	607722 (29492) 99.6%	178872* (78134) 85.8%	1205912 (80214) 97.1%
24	10315 (648) 96.3%	1016 (149) 88.5%	85* (73) 82.1%	11416 (693) 95.4%	281850 (25200) 92.8%	166121 (28085) 90.5%	56588* (48232) 61.3%	504559 (73679) 87.1%
25	3993 (484) 95.9%	891 (152) 83.9%	115* (75) 96.9%	4999 (496) 93.5%	132165 (19884) 95.0%	221534 (41041) 86.4%	102081* (64610) 83.0%	455779 (80651) 87.9%
26	3885 (740) 94.5%	1255 (239) 80.0%	37* (36) 17.1%	5177 (768) 87.8%	123162 (15618) 89.5%	229280 (48050) 81.5%	27347* (22916) 13.2%	379790 (56003) 60.7%
27	17039 (1152) 94.0%	1761 (172) 94.0%	180* (91) 56.9%	18981 (1135) 93.5%	451251 (14340) 94.4%	338792 (42878) 93.9%	180785* (65934) 52.3%	970827 (92471) 81.9%
28	4694 (412) 76.0%	540 (115) 46.5%	137* (61) 36.1%	5371 (418) 69.6%	123076 (11378) 68.1%	103498 (22916) 39.7%	107941* (48021) 22.7%	334515 (53099) 36.4%
29	1011* (404) 100.0%	130* (67) 44.4%	...	1141* (407) 81.2%	40980* (17325) 100.0%	31984* (16940) 50.6%	...	72964* (23713) 32.9%
30	6565 (1149) 97.8%	1383* (439) 90.0%	94* (44) 41.9%	8042 (1343) 94.9%	216233 (27175) 96.1%	261312* (91719) 88.7%	83337* (38316) 35.7%	560882 (94776) 74.5%
31	931* (343) 100.0%	569 (131) 100.0%	25* (24) 100.0%	1525 (372) 100.0%	24888* (7207) 100.0%	135459* (34334) 100.0%	15664* (16901) 100.0%	176011 (38675) 100.0%
32	7555 (1240) 85.9%	533* (137) 52.6%	...	8088 (1191) 80.9%	187682 (21375) 79.1%	96951* (31699) 46.4%	...	284633 (30114) 49.5%
33	3719 (515) 90.0%	970 (169) 66.1%	113* (45) 33.4%	4802 (551) 80.9%	120397 (15426) 86.9%	201638 (31546) 64.8%	118693* (47181) 19.1%	440728 (54535) 41.1%

## NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983)

## TABLE NO. III-68 (CONTINUED)

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	16684 (1270) 90.1%	2589 (167) 82.9%	175* (56) 50.6%	19448 (1296) 88.4%	500018 (20185) 90.1%	492201 (28974) 82.5%	142832* (50082) 40.7%	1135051 (59206) 75.5%
35	22292 (1068) 98.4%	2724 (211) 80.0%	507 (87) 64.7%	25524 (1080) 95.1%	589983 (7562) 97.2%	514092 (33507) 77.6%	513127 (88723) 46.1%	1617203 (99515) 67.9%
36	6727 (488) 94.7%	2425 (188) 90.3%	402* (158) 51.1%	9555 (521) 90.3%	224204 (11280) 97.3%	504976 (30585) 91.4%	371925* (127612) 31.5%	1101104 (123961) 56.0%
37	3940 (847) 99.2%	1087 (108) 91.4%	103* (42) 24.8%	5130 (830) 91.9%	125068 (16629) 98.5%	211247 (31142) 88.3%	165616* (48670) 10.9%	501931 (53521) 26.7%
38	2634 (517) 98.0%	724 (113) 75.7%	185* (102) 44.5%	3543 (556) 87.2%	100075 (13962) 95.7%	153170 (29840) 78.8%	173783* (101605) 37.7%	427028* (107227) 56.2%
39	6440 (674) 98.3%	671* (1164) 84.1%	338* (216) 100.0%	7449 (1322) 96.9%	159138 (14016) 95.9%	118680* (185985) 79.4%	209369* (120490) 100.0%	487187* (191680) 92.9%
41	3841* (984) 86.9%	356* (199) 69.8%	...	4197 (1039) 85.1%	101715 (24969) 86.5%	61265* (41638) 75.1%	...	162979* (49897) 81.8%
42	13718 (1933) 68.5%	801* (232) 54.1%	49* (37) 59.4%	14568 (1961) 67.5%	312104 (46135) 64.0%	137995* (39041) 53.3%	54578* (44519) 72.9%	504677 (65060) 61.4%
45	2645* (811) 81.6%	590* (397) 99.9%	54* (37) 36.8%	3288* (981) 82.7%	59707 (14324) 77.0%	109332* (75829) 100.0%	60262* (33832) 22.8%	229300* (79813) 50.8%
48	13951 (2124) 94.9%	814 (168) 90.2%	18* (13) 52.4%	14783 (2177) 94.5%	409615 (82753) 96.2%	157867 (37866) 89.5%	46280* (33466) 66.0%	613762 (94600) 91.3%
49	7709 (1686) 93.8%	1266* (457) 68.0%	124* (65) 71.9%	9099 (1885) 88.8%	255669 (56422) 94.9%	265887* (127973) 62.5%	103105* (46434) 70.3%	624662* (161203) 74.2%
50	27511 (2408) 90.6%	1659* (433) 92.0%	...	29170 (2478) 90.7%	543317 (61720) 86.2%	239762* (62071) 84.7%	...	783080 (99944) 85.7%
51	6838 (1196) 75.0%	...	...	6838 (1196) 73.1%	143214* (37294) 77.4%	...	...	143214* (37294) 67.5%
55	18928 (3032) 100.0%	620* (491) 99.9%	...	19548 (3239) 100.0%	309045 (54796) 100.0%	98575* (80174) 100.0%	...	407620* (110347) 100.0%
72	19179 (2577) 93.0%	675* (190) 100.0%	13* (19) 100.0%	19868 (2625) 93.2%	355842 (53732) 93.6%	82220* (24190) 100.0%	10670* (15114) 100.0%	448732 (65821) 94.9%
73	15506 (1733) 93.6%	1202 (245) 80.7%	205* (85) 60.0%	16912 (1647) 91.9%	388384 (40214) 92.2%	274956 (51832) 78.6%	155816* (63317) 47.4%	819155 (69399) 74.5%
75	25854 (3865) 98.8%	59* (60) 99.7%	...	25913 (3871) 98.8%	410346 (61960) 99.3%	8238* (8380) 100.0%	...	418584 (62332) 99.3%
76	9742 (2197) 99.9%	87* (78) 70.8%	...	9829 (2202) 99.5%	177949 (29886) 99.7%	11669* (10488) 47.9%	...	189617 (32911) 93.5%
80	1638* (643) 57.7%	751* (226) 34.7%	378* (106) 18.3%	2768 (628) 39.2%	60571* (21524) 59.6%	199576* (59594) 37.3%	559672 (139890) 18.5%	819819 (141331) 22.4%
A11	417355 (7276) 93.4%	39767 (752) 80.3%	4508 (219) 47.8%	461631 (7669) 91.3%	10141711 (114322) 92.0%	7706324 (146834) 78.8%	4265527 (239266) 34.2%	22113562 (345312) 66.5%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

### Analysis of Allergy/Sensitization Testing

(see text on questionnaire item 22 for definitions and notes)

This sub-item was displayed on the questionnaire as:

Allergy/Sensitization	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
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(Note: Response categories are as shown in the display of question 22.)

Three analyses of the responses to the allergy/sensitization sub-item are presented.

- (1) Response 2, 4, or 5 - Provision of allergy/sensitization tests to all, production, or selected workers

The estimates of the plants which provide allergy/sensitization testing to all workers, production workers or selected workers, and workers in those plants (by number and proportion of the totals) are displayed in Figures III-81 and III-82, and Tables III-69 and III-70.

Figure III-81 Allergy tests provided to all or selected workers  
(by major industrial group)

Figure III-82 Allergy tests provided to all or selected workers  
(by 2-digit SIC)

Table III-69 Number and percent of plants and employees in plants  
which provide allergy tests to all or selected workers  
(by major industry group)

Table III-70 Number and percent of plants and employees in plants  
which provide allergy tests to all or selected workers  
(by 2-digit SIC)

- (2) Response 1 or 3 - No provision of allergy/sensitization tests, or testing of management personnel only

The estimates of plants which either do not provide any allergy/sensitization tests or provide them only to management personnel, and workers in those plants (by number and proportion of the totals) are displayed in Figures III-83 and III-84, and Tables III-71 and III-72.

Figure III-83 Allergy tests not provided or for management only  
(by major industrial group)

Figure III-84 Allergy tests not provided or for management only  
(by 2-digit SIC)

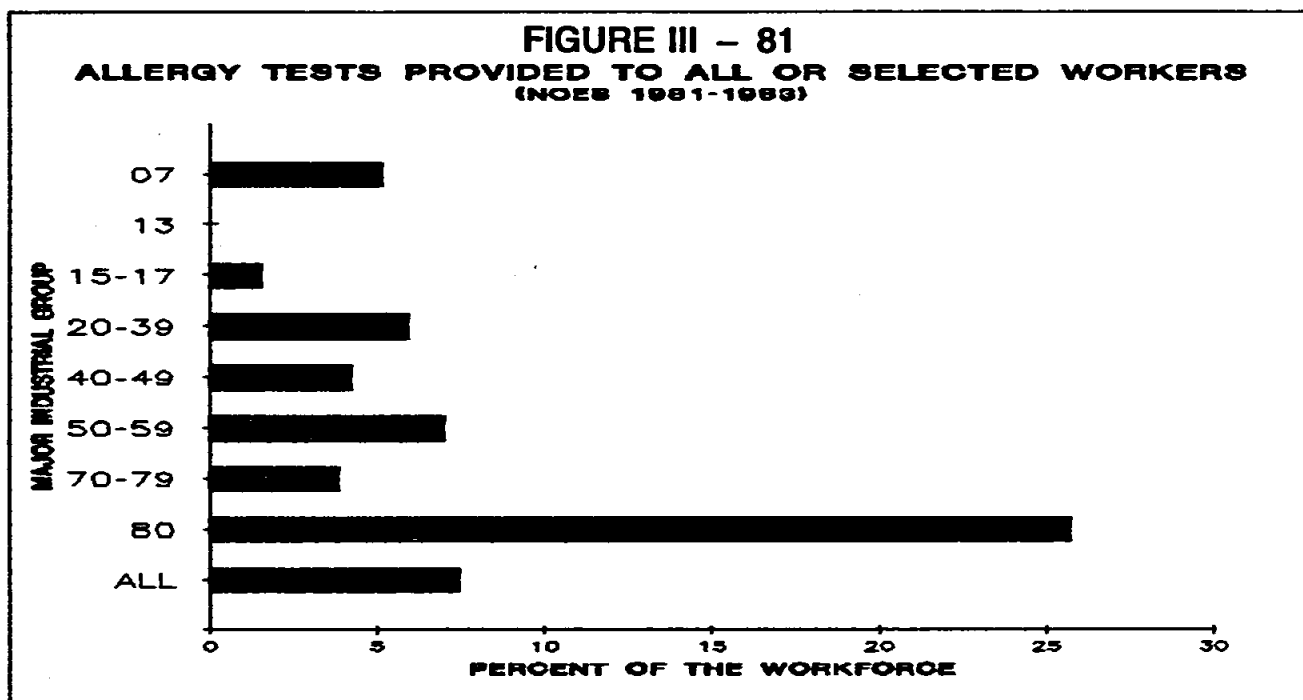
Table III-71 Number and percent of plants and employees in plants  
which provide no allergy tests or examine management  
only (by major industrial group)

Table III-72 Number and percent of plants and employees in plants  
which provide no allergy tests or examine management  
only (by 2-digit SIC)

**(3) Response 1, 2, 3, 4, or 5 - Provision of allergy/sensitization tests**

**The estimated proportions of plants and workers in those plants corresponding to each of the five possible responses to the allergy/sensitization inquiry are presented in Figure III-85.**

**Figure III-85      Provision of allergy tests**



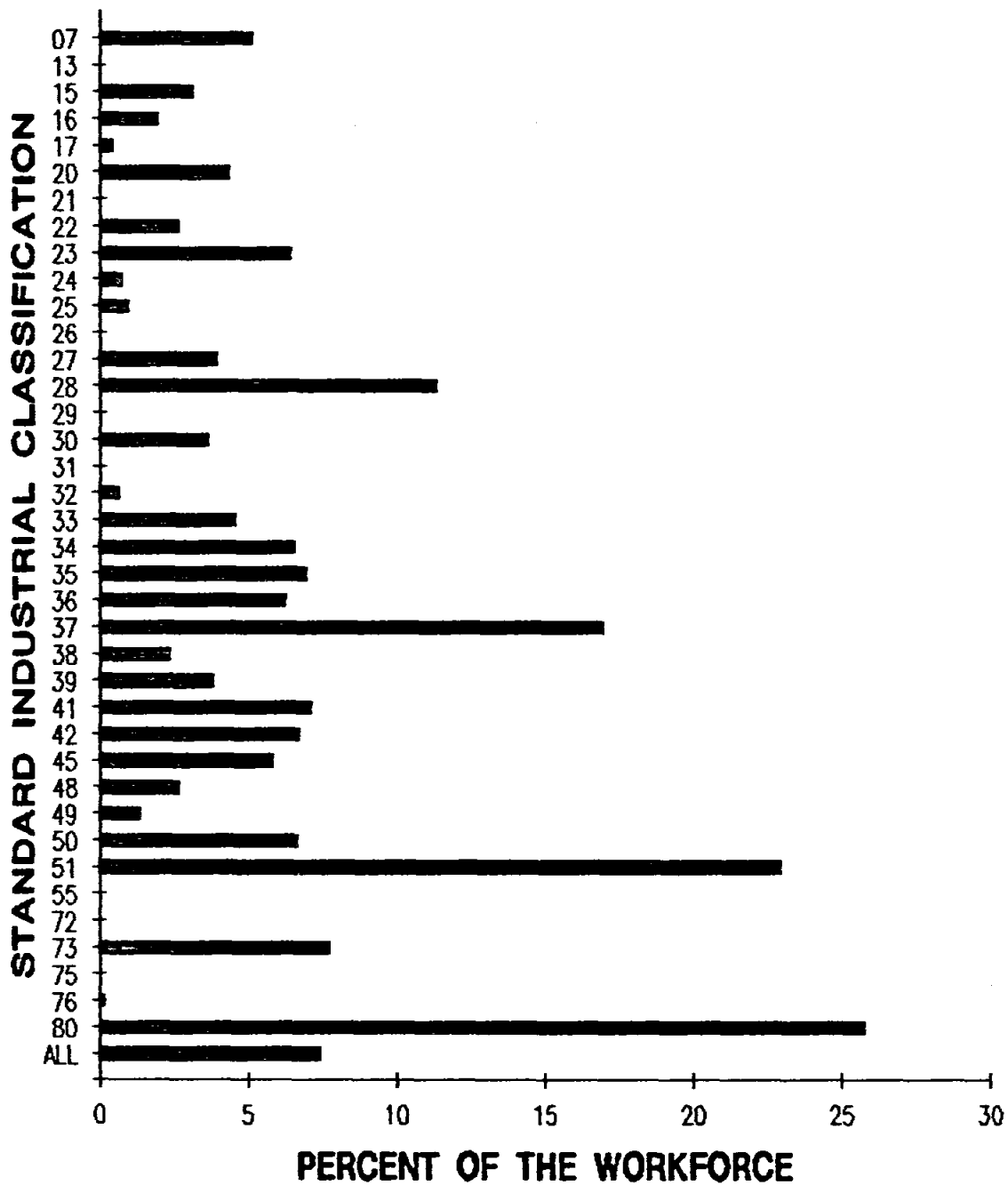
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-69

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
PROVIDE ALLERGY TESTS TO ALL OR SELECTED WORKERS

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	144* (138) 2.6%	...	...	144* (138) 2.6%	5758* (5510) 5.6%	...	...	5758* (5510) 5.2%
13	...	...	...	...	...	...	...	...
15-17	88* (88) .1%	117* (88) 2.8%	8* (7) 3.5%	214* (130) .2%	4905* (4762) .2%	15346* (11235) 2.1%	28989* (24290) 12.3%	49240* (26381) 1.6%
20-39	2263* (630) 1.5%	823* (261) 2.6%	448 (104) 7.1%	3534 (725) 1.8%	64915 (15106) 1.4%	185472* (62820) 2.9%	909219 (196491) 11.0%	1159605 (230553) 6.0%
40-49	2582* (673) 4.9%	171* (124) 2.9%	15* (17) 3.3%	2768 (658) 4.7%	70778* (20525) 4.9%	40865* (30054) 3.5%	23145* (23941) 4.0%	134788* (41568) 4.3%
50-59	1245* (516) 2.1%	381* (256) 14.3%	...	1626* (625) 2.7%	39089* (14180) 3.5%	70489* (46886) 17.2%	...	109578* (52210) 7.1%
70-79	178* (191) .2%	27* (34) 1.1%	101* (102) 28.6%	306* (263) .4%	9586* (10350) .7%	7960* (10308) 1.7%	68849* (71347) 20.3%	86395* (77903) 3.9%
80	70* (68) 2.5%	313* (108) 14.5%	529 (122) 25.7%	912 (146) 12.9%	5939* (5772) 5.8%	95632* (35069) 17.9%	841988 (177771) 27.9%	943559 (165643) 25.8%
ALL	6571 (1088) 1.5%	1830 (412) 3.7%	1102 (191) 11.7%	9504 (1215) 1.9%	200969 (32311) 1.8%	415765 (92251) 4.2%	1872189 (276523) 15.0%	2488923 (303053) 7.4%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
...No facilities observed.

**FIGURE III - 82**  
**ALLERGY TESTS PROVIDED TO ALL OR SELECTED WORKERS**  
**(NOES 1981-1983)**



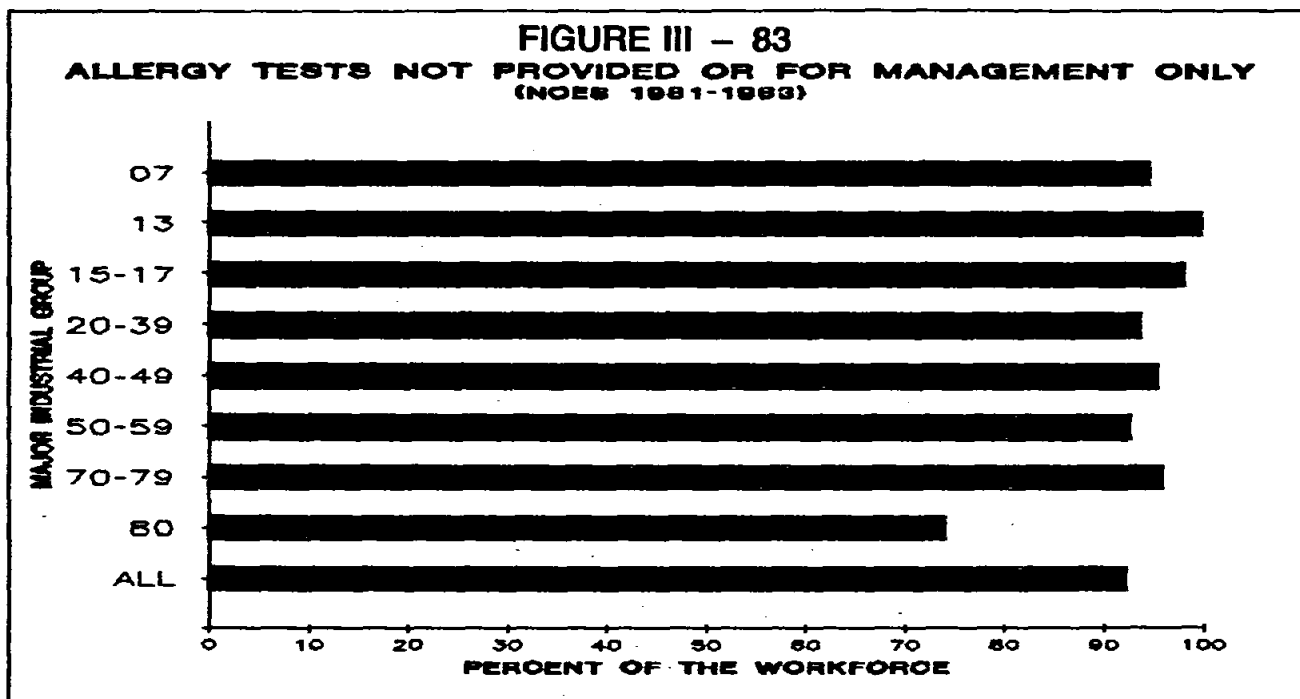
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
PROVIDE ALLERGY TESTS TO ALL OR SELECTED WORKERS

SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	144* (138) 2.6%	...	...	144* (138) 2.6%	5758* (5510) 5.6%	...	...	5758* (5510) 5.2%
13	...	...	...	...	...	...	...	...
15	...	...	8* (7) 6.2%	8* (7) .0%	...	...	28989* (24290) 21.5%	28989* (24290) 3.2%
16	81* (90) .7%	57* (46) 5.1%	...	138* (107) 1.1%	4348* (4848) 1.5%	7451* (5758) 3.6%	...	11798* (8028) 2.0%
17	8* (10) .0%	60* (68) 3.1%	...	68* (70) .1%	557* (729) .0%	7895* (8994) 2.4%	...	8453* (9125) .5%
20	153* (145) 1.3%	136* (86) 4.2%	64* (42) 11.5%	353* (174) 2.3%	6438* (6087) 1.7%	25858* (25251) 3.8%	35973* (23659) 7.3%	68269* (28739) 4.4%
21	...	...	...	...	...	...	...	...
22	...	75* (64) 4.7%	10* (14) 3.3%	85* (64) 1.8%	...	11812* (10058) 3.4%	7274* (10766) 2.8%	19086* (13648) 2.7%
23	100* (101) .8%	...	58* (43) 24.1%	158* (109) 1.0%	4586* (4632) 1.1%	...	76627* (48463) 36.8%	81213* (48878) 6.5%
24	96* (75) .9%	...	...	96* (75) .8%	4620* (3579) 1.5%	...	...	4620* (3579) .8%
25	...	15* (29) 1.4%	...	15* (29) .3%	...	4952* (9618) 1.9%	...	4952* (9618) 1.0%
26	...	...	...	...	...	...	...	...
27	886* (489) 4.9%	46 (10) 2.4%	27* (34) 8.5%	959* (487) 4.7%	19657* (10900) 4.1%	7456* (2475) 2.1%	20669* (26316) 6.0%	47782* (27332) 4.0%
28	...	168* (88) 14.5%	23* (17) 6.1%	192* (91) 2.5%	...	49963* (25376) 19.2%	54335* (29115) 11.4%	104298* (40687) 11.4%
29	...	...	...	...	...	...	...	...
30	51* (47) .8%	36* (36) 2.3%	11* (14) 4.8%	98* (84) 1.2%	2954* (2702) 1.3%	7475* (7432) 2.5%	17744* (14461) 7.6%	28173* (19963) 3.7%
31	...	...	...	...	...	...	...	...
32	227* (224) 2.6%	...	...	227* (224) 2.3%	3944* (3179) 1.7%	...	...	3944* (3179) .7%
33	...	...	8 (1) 2.4%	8 (1) .1%	...	...	49767 (8734) 8.0%	49767 (8734) 4.6%



SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	484* (258) 2.6%	84* (49) 2.7%	65* (32) 18.7%	632* (252) 2.9%	9188* (4533) 1.7%	13122* (7689) 2.2%	76826* (51855) 21.9%	99136* (50107) 6.6%
35	177* (117) .8%	16* (16) .5%	52* (25) 6.6%	245* (122) .9%	7047* (4570) 1.2%	6501* (6411) 1.0%	152396* (47854) 13.7%	165944* (49084) 7.0%
36	...	66* (102) 2.4%	72* (52) 9.2%	138* (128) 1.3%	...	15288* (21528) 2.8%	109064* (71732) 9.2%	124353* (78239) 6.3%
37	34* (75) .8%	23* (26) 1.9%	58* (29) 13.9%	114* (89) 2.7%	1954* (4362) 1.5%	8786* (10108) 3.7%	308542* (179061) 20.4%	319281* (178812) 17.0%
38	55* (57) 2.1%	72* (57) 7.5%	...	127* (87) 3.1%	4527* (4673) 4.3%	14054* (11773) 7.2%	...	18581* (13020) 2.4%
39	...	87* (177) 10.9%	...	87* (177) 1.1%	...	20205* (36515) 13.5%	...	20205* (36515) 3.9%
41	671* (333) 15.2%	...	...	671* (333) 13.6%	14346* (7734) 12.2%	...	...	14346* (7734) 7.2%
42	1368* (517) 6.8%	55* (40) 3.7%	2* (3) 3.0%	1426* (519) 6.6%	39602* (16711) 8.1%	14779* (10898) 5.7%	1430* (1510) 1.9%	55811* (20744) 6.8%
45	86* (129) 2.7%	...	13* (16) 8.8%	99* (136) 2.5%	4833* (7238) 6.2%	...	21715* (23083) 8.2%	26548* (26484) 5.9%
48	...	88* (81) 9.7%	...	88* (81) .6%	...	18455* (17704) 10.5%	...	18455* (17704) 2.7%
49	456* (414) 5.6%	...	...	456* (414) 4.5%	11997* (8985) 4.5%	...	...	11997* (8985) 1.4%
50	411* (268) 1.4%	144* (143) 8.0%	...	554* (276) 1.7%	17363* (10376) 2.8%	43477* (43050) 15.3%	...	60840* (41825) 6.7%
51	835* (375) 9.2%	237* (237) 100.0%	...	1072* (505) 11.5%	21726* (9735) 11.7%	27013* (27013) 100.0%	...	48738* (31816) 23.0%
55	...	...	...	...	...	...	...	...
72	...	...	...	...	...	...	...	...
73	169* (191) 1.0%	27* (34) 1.8%	101* (102) 29.7%	297* (263) 1.6%	9103* (10303) 2.2%	7960* (10308) 2.3%	68849* (71347) 20.9%	85912* (77886) 7.8%
75	...	...	...	...	...	...	...	...
76	9* (8) .1%	...	...	9* (8) .1%	483* (423) .3%	...	...	483* (423) .2%
80	70* (68) 2.5%	313* (108) 14.5%	529 (122) 25.7%	912 (146) 12.9%	5939* (5772) 5.8%	95632* (35069) 17.9%	841988 (177771) 27.9%	943559 (165643) 25.8%
All	6571 (1082) 1.5%	1803 (287) 3.6%	1102 (173) 11.7%	9476 (1213) 1.9%	200969 (29538) 1.8%	408134 (66798) 4.2%	1872189 (178009) 15.0%	2481293 (159153) 7.5%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.



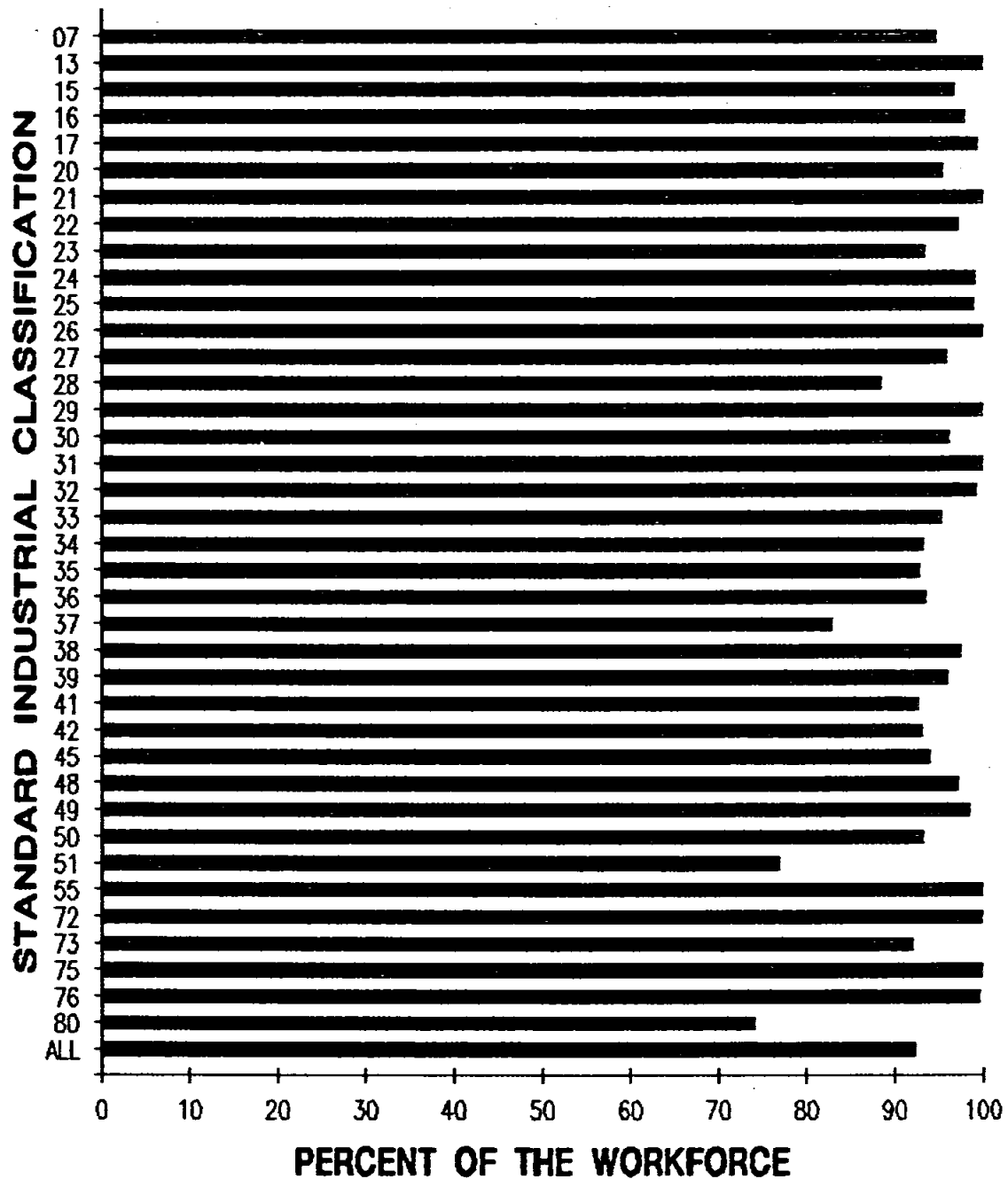
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-71

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH PROVIDE NO ALLERGY TESTS OR TEST MANAGEMENT ONLY

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	5419* (1542) 97.4%	70* (67) 100.0%	...	5490* (1529) 97.5%	97924* (29580) 94.4%	7009* (6680) 100.0%	...	104934* (29294) 94.8%
13	8597 (1933) 100.0%	1019* (331) 100.0%	46* (52) 100.0%	9662 (2132) 100.0%	208958 (38479) 100.0%	173943* (58021) 100.0%	31383* (35291) 100.0%	414284 (101840) 100.0%
15-17	94244 (2396) 99.9%	4028 (517) 97.2%	234* (133) 96.7%	98506 (2455) 99.8%	2093988 (18761) 99.8%	721753 (101933) 97.9%	207068* (98298) 87.7%	3022809 (137338) 98.4%
20-39	150980 (2460) 98.5%	30931 (1863) 97.4%	5822 (158) 92.8%	187732 (3477) 98.2%	4550780 (40467) 98.6%	6195342 (342586) 97.1%	7356102 (223153) 89.0%	18102224 (484293) 94.0%
40-49	50570 (2979) 95.1%	5673 (1020) 97.1%	453* (130) 96.7%	56696 (3481) 95.3%	1363091 (106212) 95.1%	1112449 (222191) 96.5%	550599 (106756) 96.0%	3026138 (291946) 95.7%
50-59	57146 (3692) 97.9%	2278* (596) 85.7%	...	59425 (3837) 97.3%	1085285 (82124) 96.5%	338337* (90994) 82.8%	...	1423623 (125455) 92.9%
70-79	72956 (3595) 99.8%	2320 (334) 98.9%	253* (95) 71.5%	75529 (3542) 99.6%	1383588 (65782) 99.3%	456552 (63421) 98.3%	270711* (94762) 79.7%	2110851 (108504) 96.1%
80	2769* (829) 97.5%	1853 (261) 85.6%	1532 (267) 74.3%	6155 (810) 87.1%	95705 (22092) 94.2%	438852 (66029) 82.1%	2180688 (333659) 72.1%	2715246 (343400) 74.2%
ALL	442681 (7350) 98.5%	48173 (2330) 96.3%	8340 (377) 88.3%	499193 (8064) 98.1%	10879320 (164881) 98.2%	9444237 (444069) 95.8%	10596550 (438646) 85.0%	30920108 (703775) 92.6%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
...No facilities observed.

**FIGURE III - 84**  
**ALLERGY TESTS NOT PROVIDED OR FOR MANAGEMENT ONLY**  
**(NOES 1981-1993)**



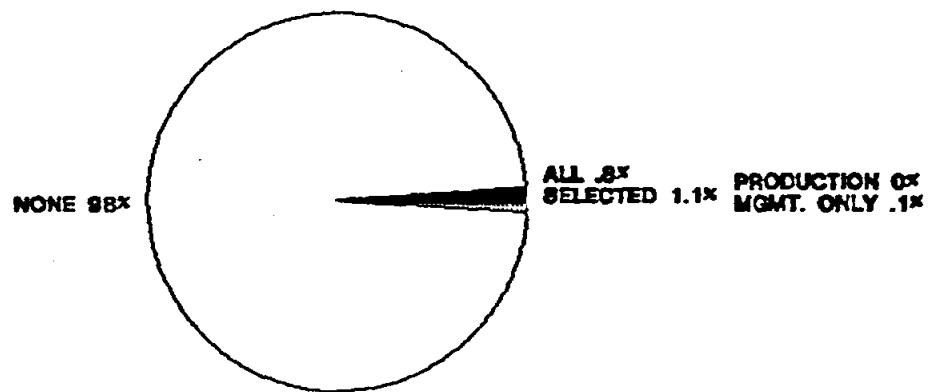
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
PROVIDE NO ALLERGY TESTS OR TEST MANAGEMENT ONLY

SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	5419* (1542) 97.4%	70* (67) 100.0%	...	5490* (1529) 97.5%	97924* (29580) 94.4%	7009* (6680) 100.0%	...	104934* (29294) 94.8%
13	8597 (1933) 100.0%	1019* (331) 100.0%	46* (52) 100.0%	9662 (2132) 100.0%	208958 (38479) 100.0%	173943* (58021) 100.0%	31383* (35291) 100.0%	414284 (101840) 100.0%
15	24916 (1781) 100.0%	1107 (197) 100.0%	127* (98) 93.9%	26149 (1838) 100.0%	562888 (44936) 100.0%	198218 (38188) 100.0%	105810* (68073) 78.5%	866916 (86335) 96.8%
16	11204 (1425) 99.3%	1062 (193) 94.9%	107* (67) 100.0%	12373 (1426) 98.9%	279742 (45788) 98.5%	200308 (42925) 96.4%	101258* (53561) 100.0%	581308 (87454) 98.0%
17	58124 (1699) 100.0%	1859 (423) 96.9%	...	59983 (1768) 99.9%	1251358 (31279) 100.0%	323227* (82340) 97.6%	...	1574585 (84860) 99.5%
20	11259 (641) 98.7%	3080 (481) 95.8%	495 (111) 88.6%	14834 (832) 97.7%	382000 (7409) 98.3%	647922 (104947) 96.2%	455802 (98439) 92.7%	1485724 (115671) 95.6%
21	30* (43) 100.0%	...	79* (56) 99.6%	109* (65) 100.0%	1866* (2685) 100.0%	...	112133* (67572) 100.0%	113999* (66861) 100.0%
22	2932 (393) 100.0%	1513 (142) 95.3%	289* (75) 96.6%	4734 (361) 98.2%	106032 (5745) 100.0%	335261 (27401) 96.6%	253819* (91536) 97.2%	695112 (86578) 97.3%
23	12414 (163) 99.2%	3102 (163) 100.0%	184* (75) 76.0%	15700 (765) 99.0%	419318 (7336) 98.9%	609922 (29811) 100.0%	131810* (60544) 63.2%	1161050 (66712) 93.5%
24	10615 (685) 99.7%	1148 (128) 100.0%	104* (74) 100.0%	11867 (711) 99.2%	299026 (24381) 98.5%	183585 (22297) 100.0%	92355* (52501) 100.0%	574966 (74858) 99.2%
25	4164 (491) 100.0%	1047 (148) 98.6%	119* (75) 99.6%	5330 (496) 99.7%	139109 (19535) 100.0%	251491 (41227) 98.7%	122998* (62394) 100.0%	513598 (77096) 99.0%
26	4113 (781) 100.0%	1569 (245) 100.0%	214* (73) 100.0%	5896 (777) 100.0%	137654 (19252) 100.0%	281476 (49372) 100.0%	206864* (65220) 100.0%	625994 (90546) 100.0%
27	17232 (1164) 95.7%	1827 (163) 97.6%	290* (99) 91.6%	19348 (1148) 95.3%	458474 (15960) 95.9%	353447 (47457) 97.9%	325081 (73777) 94.0%	1137002 (101946) 96.0%
28	6173 (428) 100.0%	992 (85) 85.5%	356 (70) 93.8%	7522 (375) 97.5%	180739 (4348) 100.0%	210868 (28406) 80.8%	422006 (97925) 88.6%	813613 (104462) 88.6%
29	1011* (404) 100.0%	293* (125) 100.0%	101* (42) 100.0%	1405* (457) 100.0%	40980* (17325) 100.0%	63255* (21394) 100.0%	117545* (70259) 100.0%	221781* (81654) 100.0%
30	6660 (1161) 99.2%	1501 (373) 97.7%	213* (76) 95.7%	8374 (1313) 98.8%	222050 (28157) 98.7%	287055* (79552) 97.5%	215903* (74998) 92.4%	725008 (108875) 96.3%
31	931* (343) 100.0%	569 (131) 100.0%	25* (24) 100.0%	1525 (372) 100.0%	24888* (7207) 100.0%	135459* (34334) 100.0%	15664* (16901) 100.0%	176011 (38675) 100.0%
32	8571 (1100) 97.4%	1012 (142) 100.0%	184* (71) 99.9%	9767 (1138) 97.7%	233216 (15498) 98.3%	208984 (30484) 100.0%	128993* (49687) 100.0%	571193 (45147) 99.3%
33	4134 (468) 100.0%	1468 (138) 100.0%	329 (62) 97.6%	5931 (478) 99.9%	138468 (10157) 100.0%	311081 (30513) 100.0%	571732 (76867) 92.0%	1021280 (77288) 95.4%

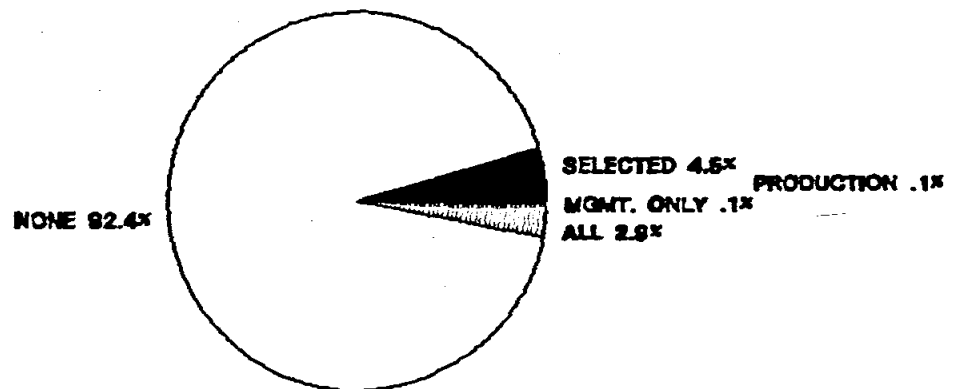
SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	18037 (1054) 97.4%	3038 (145) 97.3%	281* (75) 81.2%	21356 (1047) 97.1%	545698 (10728) 98.3%	583563 (25514) 97.8%	274229* (73923) 78.1%	1403490 (85583) 93.4%
35	22473 (1080) 99.2%	3389 (131) 99.5%	732 (79) 93.3%	26594 (1105) 99.1%	599753 (8872) 98.8%	654619 (6411) 99.0%	960537 (143641) 86.3%	2214909 (142390) 93.0%
36	7104 (611) 100.0%	2619 (154) 97.6%	715 (157) 90.9%	10439 (609) 98.7%	230488 (11906) 100.0%	537374 (21538) 97.2%	1073398 (165566) 90.8%	1841260 (151816) 93.7%
37	3940 (847) 99.2%	1167 (112) 98.1%	358 (80) 86.0%	5465 (813) 98.0%	125068 (16629) 98.5%	230399 (30858) 96.3%	1205466 (202271) 79.6%	1560933 (194615) 83.0%
38	2634 (517) 98.0%	885 (105) 92.5%	416* (139) 99.9%	3935 (579) 96.9%	100075 (13962) 95.7%	180339 (22459) 92.8%	460397* (129998) 100.0%	740811 (137708) 97.6%
39	6553 (659) 100.0%	711* (1347) 89.1%	338* (216) 100.0%	7602 (1453) 98.9%	165877 (13792) 100.0%	129244* (248324) 86.5%	209369* (120490) 100.0%	504490* (240041) 96.1%
41	3749* (959) 84.8%	510* (178) 100.0%	...	4259 (1015) 86.4%	103287 (24337) 87.8%	81542* (35755) 100.0%	...	184829* (46898) 92.8%
42	18658 (2160) 93.2%	1427 (314) 96.3%	79* (53) 96.5%	20164 (2214) 93.4%	448201 (48979) 91.9%	244042 (55570) 94.3%	73400* (49222) 98.1%	765644 (76115) 93.2%
45	3155* (940) 97.3%	590* (397) 99.9%	135* (53) 91.5%	3879* (1100) 97.5%	72664* (21217) 93.8%	109332* (75829) 100.0%	242540* (81247) 91.8%	424536* (110286) 94.1%
48	14702 (2092) 100.0%	814 (168) 90.2%	34* (21) 99.0%	15549 (2136) 99.4%	425758 (85441) 100.0%	157867 (37866) 89.5%	70083* (43687) 100.0%	653708 (102234) 97.3%
49	7759 (1693) 94.4%	1862* (567) 100.0%	173* (99) 99.8%	9794 (1888) 95.6%	257373 (56062) 95.5%	425470* (151076) 100.0%	146565* (65566) 100.0%	829407 (182939) 98.6%
50	29939 (2443) 98.6%	1659* (433) 92.0%	...	31598 (2502) 98.3%	612941 (73112) 97.2%	239762* (62071) 84.7%	...	852704 (107234) 93.3%
51	8279 (1184) 90.8%	...	...	8279 (1184) 88.5%	163299 (39390) 88.3%	...	...	163299 (39390) 77.0%
55	18928 (3032) 100.0%	620* (491) 99.9%	...	19548 (3239) 100.0%	309045 (54796) 100.0%	98575* (80174) 100.0%	...	407620* (110347) 100.0%
72	20629 (2414) 100.0%	675* (190) 100.0%	13* (19) 100.0%	21318 (2465) 100.0%	380020 (49376) 100.0%	82220* (24190) 100.0%	10670* (15114) 100.0%	472910 (62008) 100.0%
73	16405 (1703) 99.0%	1462 (229) 98.2%	240* (88) 70.3%	18107 (1672) 98.4%	412345 (42234) 97.8%	341753 (51511) 97.7%	260041* (90156) 79.1%	1014138 (106753) 92.2%
75	26180 (3850) 100.0%	59* (60) 99.7%	...	26239 (3855) 100.0%	413275 (61726) 100.0%	8238* (8380) 100.0%	...	421513 (62099) 100.0%
76	9742 (2197) 99.9%	123* (94) 100.0%	...	9865 (2218) 99.9%	177949 (29886) 99.7%	24341* (19716) 100.0%	...	202290 (40598) 99.8%
80	2769* (829) 97.5%	1853 (261) 85.6%	1532 (267) 74.3%	6155 (810) 87.1%	95705 (22092) 94.2%	438852 (66029) 82.1%	2180688 (333659) 72.1%	2715246 (343400) 74.2%
All	440134 (6832) 98.5%	47749 (658) 96.4%	8323 (374) 88.3%	496207 (7021) 98.1%	10823511 (65250) 98.2%	9365647 (96803) 95.8%	10587545 (509757) 85.0%	30776704 (550465) 92.5%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE III - 85**  
**PROVISION OF ALLERGY TESTS**  
**(NOES 1981-1983)**



**PLANTS**



**WORKERS**

### Analysis of Immunization Provision

(see text on questionnaire item 22 for definitions and notes)

This sub-item was displayed on the questionnaire as:

Immunizations (flu, etc.)	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
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(Note: Response categories are as shown in the display of question 22.)

Three analyses of the responses to the immunization sub-item are presented.

- (1) Response 2, 4, or 5 - Provision of immunizations to all, production, or selected workers

The estimates of the plants which provide immunizations to all workers, production workers or selected workers, and workers in those plants (by number and proportion of the totals) are displayed in Figures III-86 and III-87, and Tables III-73 and III-74.

Figure III-86	Immunizations provided to all or selected workers (by major industrial group)
Figure III-87	Immunizations provided to all or selected workers (by 2-digit SIC)
Table III-73	Number and percent of plants and employees in plants which provide immunizations to all or selected workers (by major industry group)
Table III-74	Number and percent of plants and employees in plants which provide immunizations to all or selected workers (by 2-digit SIC)

- (2) Response 1 or 3 - No provision of immunizations, or testing of management personnel only

The estimates of plants which either do not provide any immunizations or provide them only to management personnel, and workers in those plants (by number and proportion of the totals) are displayed in Figures III-88 and III-89, and Tables III-75 and III-76.

Figure III-88	Immunizations not provided or for management only (by major industrial group)
Figure III-89	Immunizations not provided or for management only (by 2-digit SIC)
Table III-75	Number and percent of plants and employees in plants which provide no immunizations or immunize management only (by major industrial group)
Table III-76	Number and percent of plants and employees in plants which provide no immunizations or immunize management only (by 2-digit SIC)

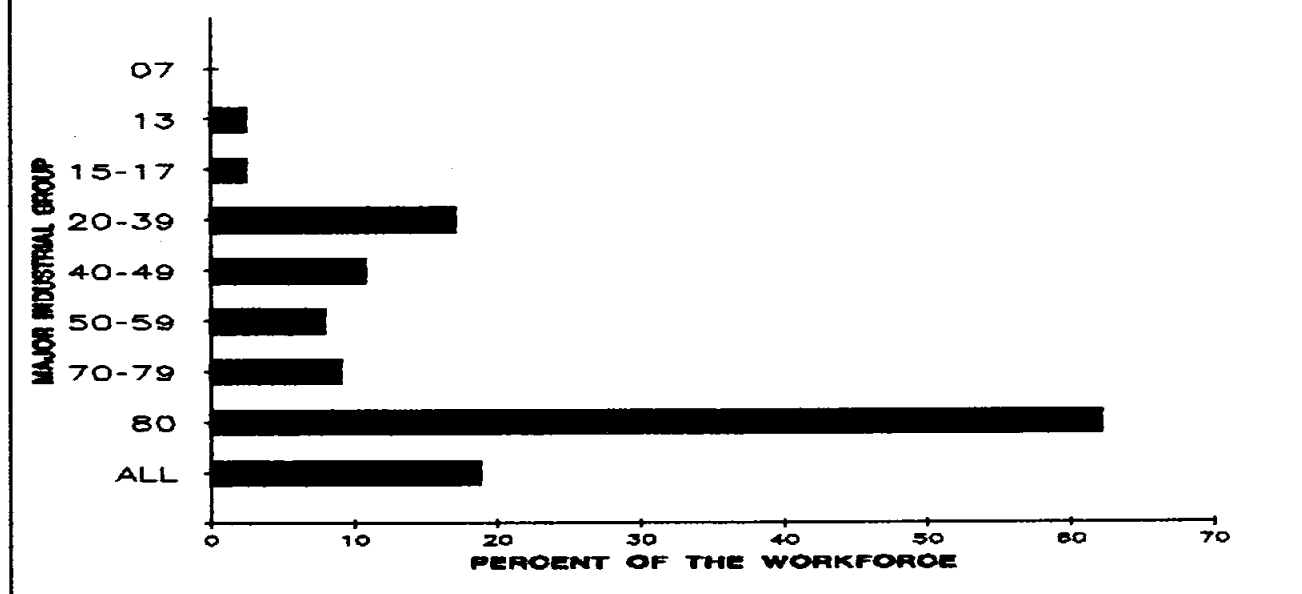
**(3) Response 1, 2, 3, 4, or 5 - Provision of immunization**

**The estimated proportions of plants and workers in those plants corresponding to each of the five possible responses to the immunization inquiry are presented in Figure III-90.**

**Figure III-90      Provision of immunizations**



**FIGURE III - 86**  
**IMMUNIZATIONS PROVIDED TO ALL OR SELECTED WORKERS**  
**(NOES 1981-1983)**



NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-73

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 PROVIDE IMMUNIZATIONS TO ALL OR SELECTED WORKERS

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	...	...	...	...	...	...	...	...
13	60* (65) .7%	32* (29) 3.1%	...	92* (71) 1.0%	3743* (4061) 1.8%	7071* (6377) 4.1%	...	10814* (7422) 2.6%
15-17	144* (149) .2%	218* (129) 5.3%	8* (7) 3.5%	371* (192) .4%	5057* (5221) .2%	44639* (28146) 6.1%	28989* (24290) 12.3%	78685* (37245) 2.6%
20-39	3001 (538) 2.0%	2582 (412) 8.1%	1598 (198) 25.5%	7181 (786) 3.8%	119395 (18802) 2.6%	628456 (91324) 9.8%	2556260 (243782) 30.9%	3304111 (261817) 17.2%
40-49	5175 (1194) 9.7%	334* (140) 5.7%	94* (72) 20.1%	5604 (1175) 9.4%	127900 (27316) 8.9%	77922* (28674) 6.8%	140232* (76134) 24.4%	346054* (87780) 10.9%
50-59	1413* (551) 2.4%	404* (252) 15.2%	...	1817* (647) 3.0%	47487* (17162) 4.2%	77167* (43219) 18.9%	...	124654* (49127) 8.1%
70-79	730* (636) 1.0%	257* (111) 10.9%	106* (106) 30.0%	1094* (660) 1.4%	28003* (23867) 2.0%	59345* (23688) 12.8%	115526* (83683) 34.0%	202874* (90952) 9.2%
80	706* (336) 24.9%	1049 (207) 48.4%	1354 (249) 65.7%	3109 (496) 44.0%	28844* (8819) 28.4%	251975 (47372) 47.1%	1998606 (313050) 66.1%	2279425 (318902) 62.3%
ALL	11230 (1601) 2.5%	4876 (571) 9.8%	3161 (343) 33.5%	19267 (1773) 3.8%	360428 (45666) 3.3%	1146576 (121113) 11.6%	4839613 (413303) 38.8%	6346617 (435981) 19.0%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

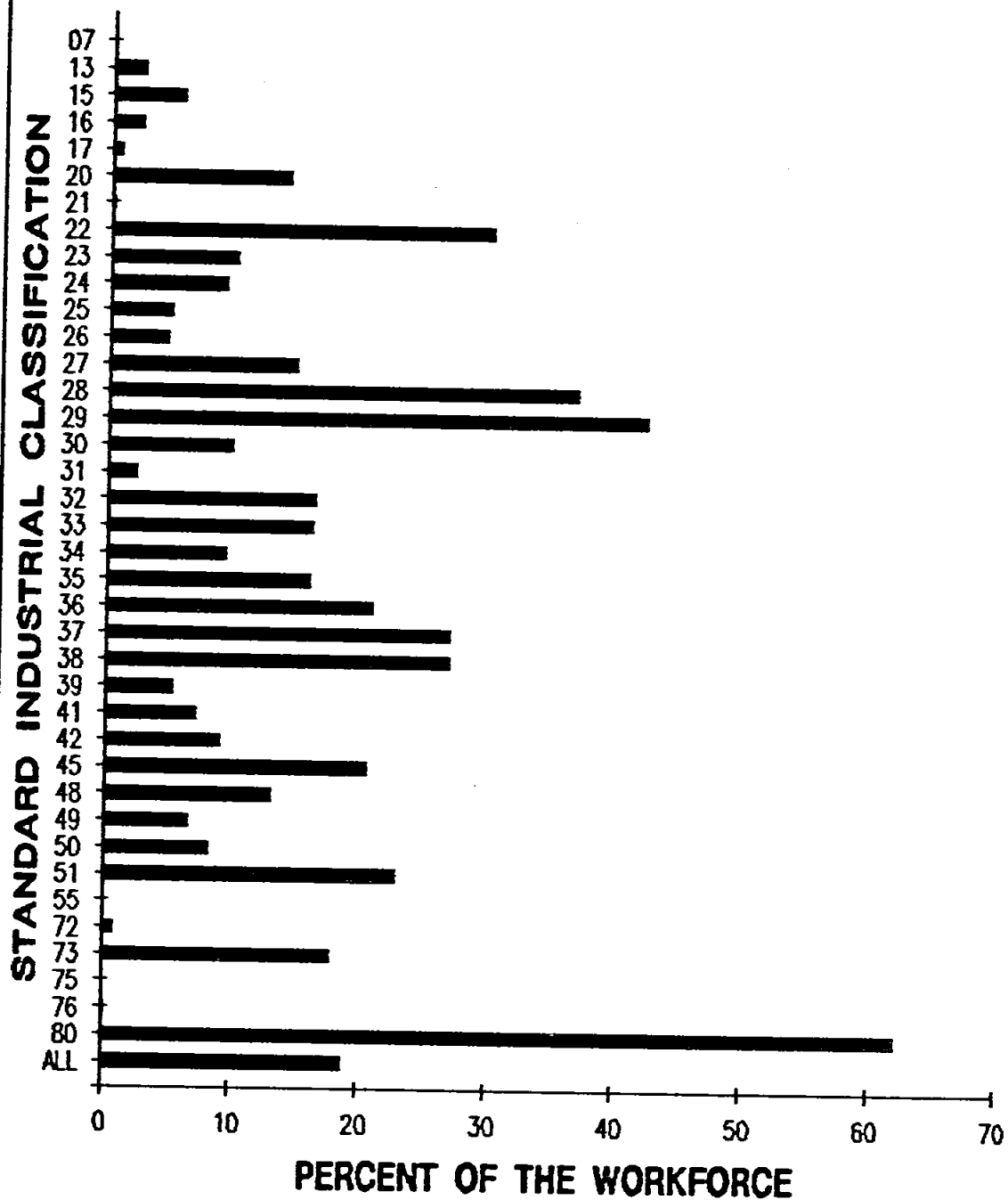
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
PROVIDE IMMUNIZATIONS TO ALL OR SELECTED WORKERS

SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	...	...	...	...	...	...	...	...
13	60* (65) .7%	32* (29) 3.1%	...	92* (71) 1.0%	3743* (4061) 1.8%	7071* (6377) 4.1%	...	10814* (7422) 2.6%
15	...	56* (57) 5.0%	8* (7) 6.2%	64* (58) .2%	...	21769* (22236) 11.0%	28989* (24290) 21.5%	50758* (35137) 5.7%
16	...	103* (73) 9.2%	...	103* (73) .8%	...	14975* (10754) 7.2%	...	14975* (10754) 2.5%
17	144* (149) .2%	60* (68) 3.1%	...	204* (164) .3%	5057* (5221) .4%	7895* (8994) 2.4%	...	12952* (10371) .8%
20	373* (181) 3.3%	344* (149) 10.7%	144* (57) 25.8%	861 (213) 5.7%	18492* (9949) 4.8%	94639* (56019) 14.0%	106208* (39161) 21.6%	219339 (49010) 14.1%
21	4* (6) 14.6%	...	...	4* (6) 4.0%	258* (345) 13.8%	...	...	258* (345) .2%
22	27* (56) .9%	241* (125) 15.2%	153* (70) 51.2%	422* (167) 8.8%	1944* (3944) 1.8%	62950* (27571) 18.1%	149920* (71308) 57.4%	214815* (85200) 30.1%
23	318* (188) 2.5%	138* (77) 4.4%	58* (43) 24.1%	514* (207) 3.2%	17643* (9872) 4.2%	30707* (16131) 5.0%	76627* (48463) 36.8%	124978* (54235) 10.1%
24	...	148* (67) 12.9%	12* (10) 11.5%	160* (67) 1.3%	...	26454* (13164) 14.4%	27621* (22969) 29.9%	54075* (25163) 9.3%
25	...	73* (74) 6.8%	...	73* (74) 1.4%	...	25739* (26091) 10.0%	...	25739* (26091) 5.0%
26	91* (78) 2.2%	43* (41) 2.8%	7* (6) 3.2%	142* (94) 2.4%	7844* (6542) 5.7%	13456* (12658) 4.8%	7945* (7094) 3.8%	29245* (17954) 4.7%
27	537* (333) 3.0%	282* (132) 15.1%	83* (46) 26.2%	902* (396) 4.4%	13170* (8451) 2.8%	54694* (29013) 15.2%	107452* (56230) 31.1%	175316* (66669) 14.8%
28	360* (139) 5.8%	210* (99) 18.1%	203* (66) 53.3%	773* (229) 10.0%	16543* (6807) 9.2%	68334* (34183) 26.2%	253791* (72016) 53.3%	338669* (86599) 36.9%
29	...	81* (26) 27.5%	63* (33) 62.5%	144* (46) 10.2%	...	21657* (7102) 34.2%	72301* (43442) 61.5%	93958* (44328) 42.4%
30	...	...	55* (27) 24.5%	55* (27) .6%	...	...	74541* (37383) 31.9%	74541* (37383) 9.9%
31	...	39* (41) 6.9%	...	39* (41) 2.6%	...	4203* (4407) 3.1%	...	4203* (4407) 2.4%
32	294* (231) 3.3%	88* (112) 8.7%	96* (54) 52.2%	478* (235) 4.8%	8686* (6075) 3.7%	19280* (23907) 9.2%	66755* (36399) 51.8%	94721* (40213) 16.5%
33	74* (92) 1.8%	145* (86) 9.9%	83* (39) 24.7%	303* (155) 5.1%	5942* (7338) 4.3%	29336* (18606) 9.4%	139420* (36284) 22.4%	174698 (41594) 16.3%

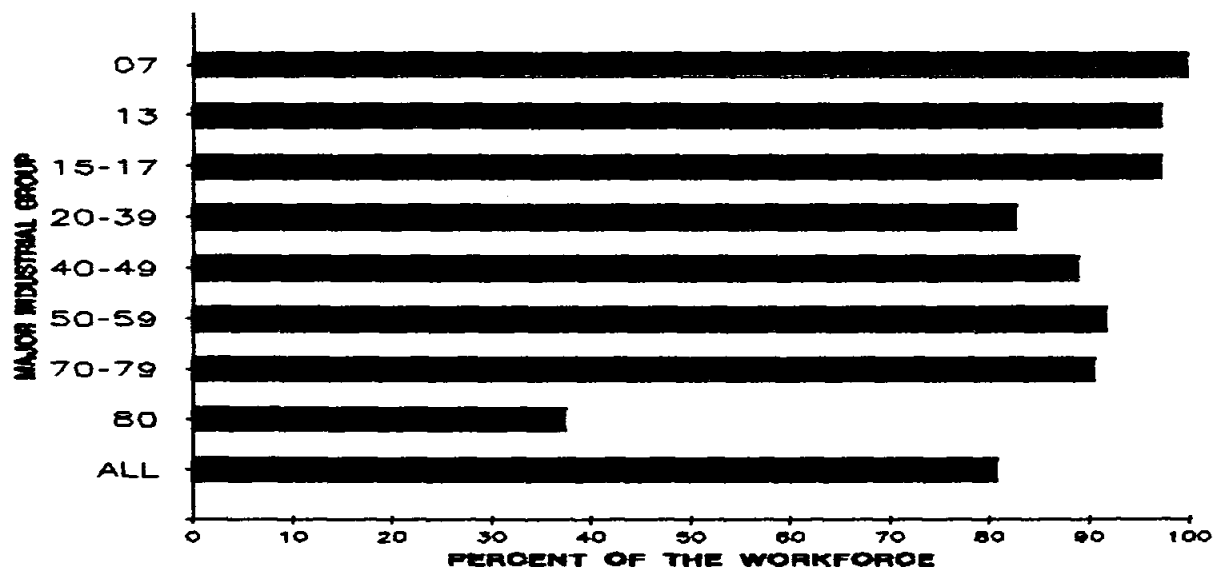
SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	469* (245) 2.5%	219* (86) 7.0%	41* (25) 11.8%	729* (270) 3.3%	12402* (5064) 2.2%	63125* (27374) 10.6%	66821* (33204) 19.0%	142348* (40251) 9.5%
35	364* (203) 1.6%	99* (57) 2.9%	231* (65) 29.4%	694* (230) 2.6%	9990* (5088) 1.6%	21686* (11579) 3.3%	348957 (74041) 31.4%	380632 (77456) 16.0%
36	...	149* (151) 5.5%	177* (64) 22.5%	326* (194) 3.1%	...	36396* (33476) 6.6%	377160* (157076) 31.9%	413556* (171813) 21.0%
37	34* (75) .8%	38* (39) 3.2%	77 (19) 18.6%	149* (83) 2.7%	1954* (4362) 1.5%	4550* (4650) 1.9%	502333* (169450) 33.2%	508837* (169763) 27.1%
38	55* (57) 2.1%	136* (66) 14.2%	115* (74) 27.6%	306* (128) 7.5%	4527* (4673) 4.3%	22728* (12826) 11.7%	178405* (106388) 38.8%	205561* (107402) 27.1%
39	...	109* (173) 13.7%	...	109* (173) 1.4%	...	28521* (35380) 19.1%	...	28521* (35380) 5.4%
41	671* (333) 15.2%	...	...	671* (333) 13.6%	14346* (7734) 12.2%	...	...	14346* (7734) 7.2%
42	2033* (612) 10.2%	88* (50) 6.0%	...	2121* (621) 9.8%	52407* (16084) 10.7%	23378* (13273) 9.0%	...	75785* (23082) 9.2%
45	229* (195) 7.1%	...	45* (25) 30.3%	273* (196) 6.9%	8394* (8025) 10.8%	...	84778* (58270) 32.1%	93172* (57568) 20.7%
48	751* (722) 5.1%	115* (79) 12.7%	19* (16) 56.8%	885* (713) 5.7%	16143* (14712) 3.8%	35805* (24531) 20.3%	37029* (29526) 52.8%	88977* (37501) 13.2%
49	893* (599) 10.9%	104* (94) 5.6%	30* (72) 17.6%	1027* (647) 10.0%	27033* (17897) 10.0%	11108* (10056) 2.6%	18424* (43651) 12.6%	56566* (55256) 6.7%
50	578* (325) 1.9%	167* (125) 9.2%	...	745* (322) 2.3%	25761* (13724) 4.1%	50155* (37774) 17.7%	...	75915* (37140) 8.3%
51	835* (375) 9.2%	237* (237) 100.0%	...	1072* (505) 11.5%	21726* (9735) 11.7%	27013* (27013) 100.0%	...	48738* (31816) 23.0%
55	...	...	...	...	...	...	...	...
72	485* (570) 2.4%	...	...	485* (570) 2.3%	4853* (5703) 1.3%	...	...	4853* (5703) 1.0%
73	236* (236) 1.4%	257* (111) 17.2%	106* (106) 31.2%	599* (299) 3.3%	22666* (22657) 5.4%	59345* (23688) 17.0%	115526* (83683) 35.1%	197537* (90632) 18.0%
75	...	...	...	...	...	...	...	...
76	9* (8) .1%	...	...	9* (8) .1%	483* (423) .3%	...	...	483* (423) .2%
80	706* (336) 24.9%	1049 (207) 48.4%	1354 (249) 65.7%	3109 (496) 44.0%	28844* (8819) 28.4%	251975 (47372) 47.1%	1998606 (313050) 66.1%	2279425 (318902) 62.3%
A11	10632 (1721) 2.4%	4849 (492) 9.8%	3161 (281) 33.5%	18641 (1669) 3.7%	350850 (44639) 3.2%	1138945 (95466) 11.7%	4839613 (361868) 38.8%	6329408 (378526) 19.0%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE III - 87**  
**IMMUNIZATIONS PROVIDED TO ALL OR SELECTED WORKERS**  
 (NOES 1981-1983)



**FIGURE III - 88**  
**IMMUNIZATIONS NOT PROVIDED OR FOR MANAGEMENT ONLY**  
**(NOES 1981-1983)**



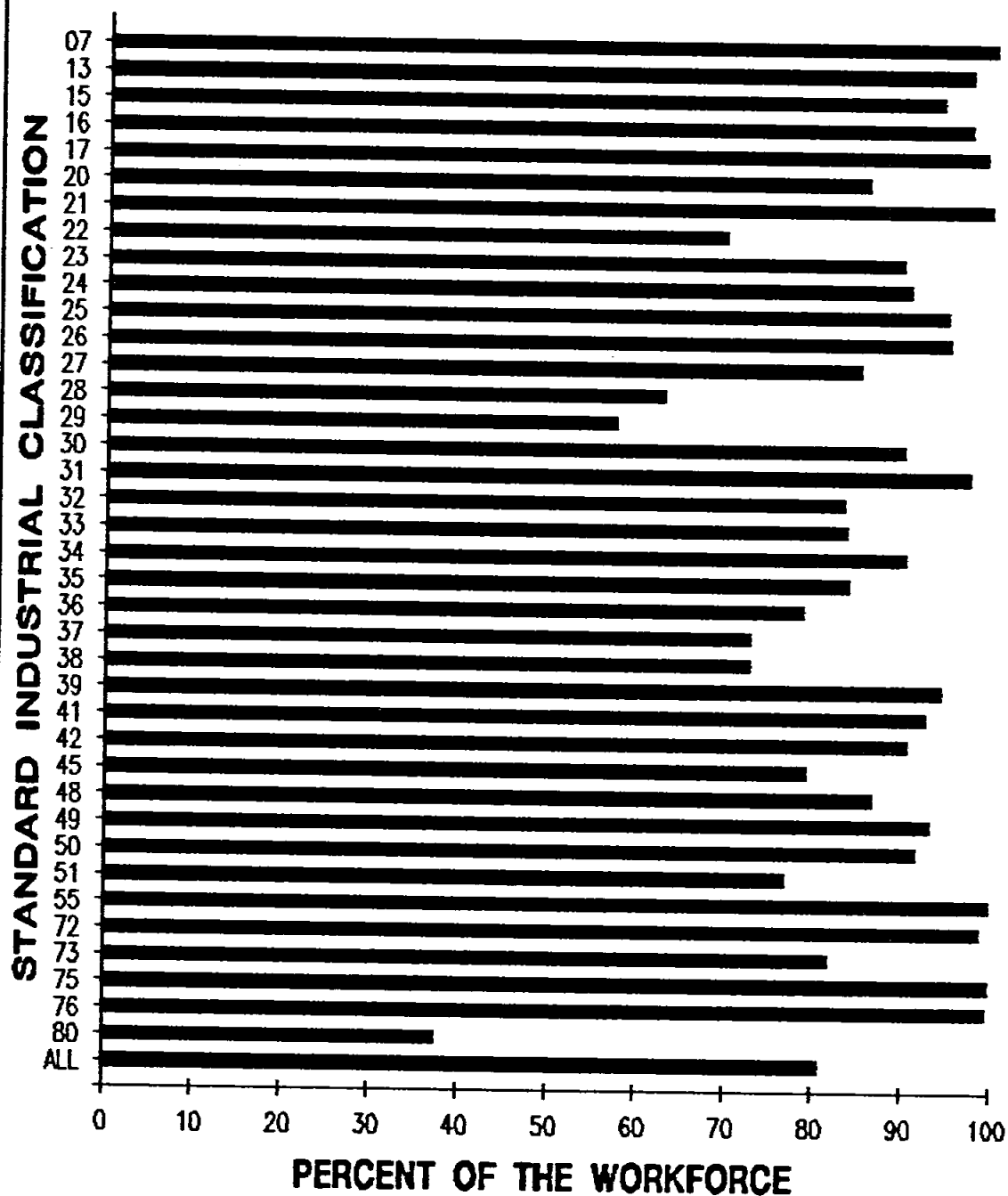
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-75

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 PROVIDE NO IMMUNIZATIONS OR IMMUNIZE MANAGEMENT ONLY

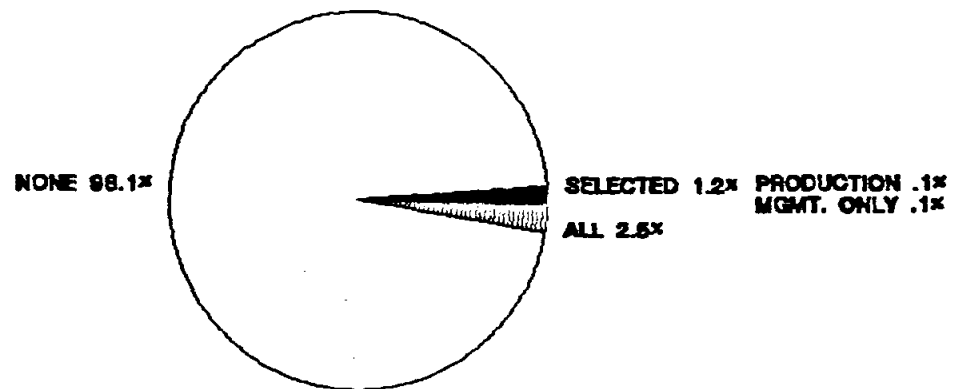
MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	5563* (1575) 100.0%	70* (67) 100.0%	...	5633* (1557) 100.0%	103682* (30828) 100.0%	7009* (6680) 100.0%	...	110692* (29333) 100.0%
13	8537 (1953) 99.3%	987* (345) 96.8%	46* (52) 100.0%	9570 (2168) 99.0%	205215 (39579) 98.2%	166872* (61940) 95.9%	31383* (35291) 100.0%	403469* (106586) 97.4%
15-17	94188 (2401) 99.8%	3927 (539) 94.7%	234* (133) 96.7%	98349 (2471) 99.6%	2093836 (19785) 99.8%	692460 (108960) 93.9%	207068* (98298) 87.7%	2993364 (138817) 97.4%
20-39	150242 (2371) 98.0%	29172 (1846) 91.9%	4672 (212) 74.5%	184085 (3495) 96.2%	4496300 (39254) 97.4%	5752357 (345022) 90.2%	5709061 (299086) 69.1%	15957718 (584497) 82.8%
40-49	47977 (2872) 90.3%	5509 (995) 94.3%	374 (90) 79.9%	53860 (3443) 90.6%	1305969 (101460) 91.1%	1075392 (218239) 93.2%	433511 (88995) 75.6%	2814872 (290096) 89.1%
50-59	56979 (3689) 97.6%	2255* (598) 84.8%	...	59234 (3827) 97.0%	1076887 (82608) 95.8%	331659* (91146) 81.1%	...	1408547 (124512) 91.9%
70-79	72404 (3555) 99.0%	2090 (333) 89.1%	248* (89) 70.0%	74741 (3552) 98.6%	1365171 (71031) 98.0%	405167 (63008) 87.2%	224035* (72700) 66.0%	1994373 (101292) 90.8%
80	2133* (699) 75.1%	1117 (192) 51.6%	708 (147) 34.3%	3958 (650) 56.0%	72801* (19465) 71.6%	282509 (52292) 52.9%	1024070 (252237) 33.9%	1379380 (258944) 37.7%
ALL	438022 (7257) 97.5%	45127 (2306) 90.2%	6281 (321) 66.5%	489430 (8061) 96.2%	10719862 (164291) 96.7%	8713426 (444336) 88.4%	7629127 (420938) 61.2%	27062414 (741687) 81.0%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

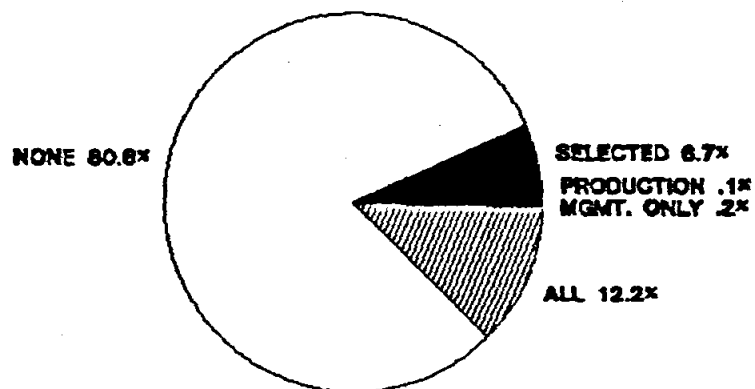
**FIGURE III - 89**  
**IMMUNIZATIONS NOT PROVIDED OR FOR MANAGEMENT ONLY**  
**(NOES 1981-1983)**



**FIGURE III - 90**  
**PROVISION OF IMMUNIZATIONS**  
**(NOES 1981-1983)**



**PLANTS**



**WORKERS**

## NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-76

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
PROVIDE NO IMMUNIZATIONS OR IMMUNIZE MANAGEMENT ONLY

SIC CODE	PLANTS			TOTAL	EMPLOYEES			TOTAL
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)		SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	
07	5563* (1575) 100.0%	70* (67) 100.0%	...	5633* (1557) 100.0%	103682* (30828) 100.0%	7009* (6680) 100.0%	...	110692* (29333) 100.0%
13	8537 (1953) 99.3%	987* (345) 96.8%	46* (52) 100.0%	9570 (2168) 99.0%	205215 (39579) 98.2%	166872* (61940) 95.9%	31383* (35291) 100.0%	403469* (106586) 97.4%
15	24916 (1781) 100.0%	1052 (197) 95.0%	127* (98) 93.9%	26094 (1839) 99.8%	562888 (44936) 100.0%	176449 (32852) 89.0%	105810* (68073) 78.5%	845147 (85845) 94.3%
16	11284 (1432) 100.0%	1016 (189) 90.8%	107* (67) 100.0%	12408 (1420) 99.2%	284089 (46249) 100.0%	192784 (41809) 92.8%	101258* (53561) 100.0%	578131 (85163) 97.5%
17	57988 (1718) 99.8%	1859 (423) 96.9%	...	59847 (1787) 99.7%	1246859 (32529) 99.6%	323227* (82340) 97.6%	...	1570086 (85492) 99.2%
20	11039 (619) 96.7%	2872 (450) 89.3%	415* (107) 74.2%	14326 (786) 94.3%	369946 (10920) 95.2%	579141 (94031) 86.0%	385567* (97550) 78.4%	1334654 (113745) 85.9%
21	26* (42) 86.5%	...	79* (56) 99.6%	105* (65) 96.0%	1608* (2605) 86.2%	...	112133* (67572) 100.0%	113741* (66982) 99.8%
22	2904 (401) 99.1%	1347 (149) 84.8%	146* (61) 48.8%	4397 (375) 91.2%	104088 (6726) 98.2%	284123 (30147) 81.9%	111173* (62416) 42.6%	499384 (69735) 69.9%
23	12195 (734) 97.5%	2965 (195) 95.6%	184* (75) 76.0%	15344 (744) 96.8%	406261 (8936) 95.8%	579215 (34719) 95.0%	131810* (60544) 63.2%	1117286 (58967) 89.9%
24	10711 (682) 100.0%	1000 (155) 87.1%	92* (75) 88.7%	11804 (689) 98.7%	303646 (24224) 100.0%	157131 (23974) 85.6%	64733* (51314) 70.1%	525511 (62069) 90.7%
25	4164 (491) 100.0%	989 (151) 93.1%	119* (75) 99.6%	5272 (475) 98.6%	139109 (19535) 100.0%	230703 (43143) 90.0%	122998* (62394) 100.0%	492810 (78378) 95.0%
26	4021 (768) 97.8%	1525 (248) 97.2%	207* (71) 96.9%	5754 (760) 97.6%	129810 (16977) 94.3%	268019 (49190) 95.2%	198919* (61725) 96.2%	596749 (87371) 95.3%
27	17581 (1055) 97.0%	1591 (163) 84.9%	234* (109) 73.9%	19405 (1041) 95.6%	464962 (14211) 97.2%	306208 (43050) 84.8%	238298* (84881) 68.9%	1009468 (105871) 85.2%
28	5813 (448) 94.2%	950 (148) 81.9%	177* (72) 46.7%	6940 (505) 90.0%	164196 (8355) 90.8%	192497 (41082) 73.8%	222549* (102113) 46.7%	579242 (111045) 63.1%
29	1011* (404) 100.0%	213* (125) 72.7%	38* (33) 37.6%	1262* (446) 89.8%	40980* (17325) 100.0%	41598* (19518) 65.8%	45244* (56440) 38.5%	127822* (63857) 57.6%
30	6711 (1152) 100.0%	1537 (382) 100.0%	169* (74) 75.4%	8417 (1304) 99.3%	225004 (27639) 100.0%	294530* (81731) 100.0%	159106* (69997) 68.1%	678640 (118797) 90.1%
31	931* (343) 100.0%	530 (116) 93.1%	25* (24) 100.0%	1486 (364) 97.4%	24888* (7207) 100.0%	131256 (32554) 96.9%	15664* (16901) 100.0%	171808 (36830) 97.6%
32	8504 (1115) 96.7%	924 (166) 91.3%	88* (54) 47.7%	9516 (1176) 95.2%	228474 (16498) 96.3%	189704 (27503) 90.8%	62238* (42004) 48.2%	480416 (46012) 83.5%
33	4060 (481) 98.2%	1323 (143) 90.1%	254* (66) 75.3%	5637 (500) 94.9%	132526 (10045) 95.7%	281744 (34987) 90.6%	482079 (99487) 77.6%	896349 (101913) 83.7%



SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	18052 (1015) 97.5%	2903 (164) 93.0%	305* (80) 88.1%	21259 (1013) 96.7%	542483 (9583) 97.8%	533560 (38176) 89.4%	284234* (84723) 81.0%	1360277 (98677) 90.5%
35	22286 (1070) 98.4%	3306 (141) 97.1%	553 (80) 70.6%	26145 (1118) 97.4%	596810 (8889) 98.4%	639435 (11578) 96.7%	763976 (136784) 68.6%	2000221 (140229) 84.0%
36	7104 (611) 100.0%	2536 (195) 94.4%	610 (147) 77.6%	10250 (594) 96.9%	230488 (11906) 100.0%	516266 (33481) 93.4%	805302 (135184) 68.1%	1552057 (122277) 79.0%
37	3940 (847) 99.2%	1152 (109) 96.8%	338* (87) 81.4%	5430 (823) 97.3%	125068 (16629) 98.5%	234634 (29304) 98.1%	1011675 (165922) 66.8%	1371377 (158587) 72.9%
38	2634 (517) 98.0%	821 (104) 85.8%	301* (140) 72.3%	3755 (602) 92.5%	100075 (13962) 95.7%	171665 (21670) 88.3%	281993* (126100) 61.2%	553732 (130222) 72.9%
39	6553 (659) 100.0%	689* (1354) 86.3%	338* (216) 100.0%	7580 (1459) 98.6%	165877 (13792) 100.0%	120928* (250221) 80.9%	209369* (120490) 100.0%	496175* (241987) 94.6%
41	3749* (959) 84.8%	510* (178) 100.0%	...	4259 (1015) 86.4%	103287 (24337) 87.8%	81542* (35755) 100.0%	...	184829* (46898) 92.8%
42	17994 (2100) 89.8%	1394 (301) 94.0%	82* (54) 99.5%	19469 (2169) 90.2%	435396 (48181) 89.3%	235444 (50704) 91.0%	74830* (49333) 100.0%	745669 (74115) 90.8%
45	3013* (963) 93.0%	590* (397) 99.9%	103* (50) 70.0%	3705* (1108) 93.1%	69103* (21987) 89.2%	109332* (75829) 100.0%	179477* (60146) 67.9%	357912* (95639) 79.3%
48	13951 (2124) 94.9%	787 (187) 87.2%	14* (12) 42.3%	14752 (2192) 94.3%	409615 (82753) 96.2%	140517* (35318) 79.7%	33054* (28615) 47.2%	583186 (98619) 86.8%
49	7323 (1509) 89.1%	1758* (529) 94.4%	142* (69) 82.2%	9223 (1655) 90.0%	242337 (49356) 90.0%	414362* (149426) 97.4%	128141* (55917) 87.4%	784839 (180194) 93.3%
50	29771 (2409) 98.1%	1636* (434) 90.8%	...	31407 (2453) 97.7%	604543 (71227) 95.9%	233084* (62255) 82.3%	...	837628 (103427) 91.7%
51	8279 (1184) 90.8%	...	...	8279 (1184) 88.5%	163299 (39390) 88.3%	...	...	163299 (39390) 77.0%
55	18928 (3032) 100.0%	620* (491) 99.9%	...	19548 (3239) 100.0%	309045 (54796) 100.0%	98575* (80174) 100.0%	...	407620* (110347) 100.0%
72	20144 (2537) 97.6%	675* (190) 100.0%	13* (19) 100.0%	20833 (2589) 97.7%	375166 (50209) 98.7%	82220* (24190) 100.0%	10670* (15114) 100.0%	468057 (62761) 99.0%
73	16338 (1795) 98.6%	1232 (232) 82.7%	235* (78) 68.8%	17805 (1761) 96.7%	398781 (52912) 94.6%	290368 (50796) 83.0%	213364* (65121) 64.9%	902513 (86202) 82.0%
75	26180 (3850) 100.0%	59* (60) 99.7%	...	26239 (3855) 100.0%	413275 (61726) 100.0%	8238* (8380) 100.0%	...	421513 (62099) 100.0%
76	9742 (2197) 99.9%	123* (94) 100.0%	...	9865 (2218) 99.9%	177949 (29886) 99.7%	24341* (19716) 100.0%	...	202290 (40598) 99.8%
80	2133* (699) 75.1%	1117 (192) 51.6%	708 (147) 34.3%	3958 (650) 56.0%	72801* (19465) 71.6%	282509 (52292) 52.9%	1024070 (252237) 33.9%	1379380 (258944) 37.7%
All	436074 (6665) 97.6%	44703 (741) 90.2%	6265 (312) 66.5%	487042 (6884) 96.3%	10673631 (82126) 96.8%	8634836 (128406) 88.3%	7620121 (403193) 61.2%	26928588 (443246) 81.0%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**NOES QUESTIONNAIRE ITEM NO. 23**  
**Required Pre-placement or Pre-hiring Examinations**

**Intent**

The intent of this question was to determine if an industrial facility required a medical examination of a worker's health before hiring or placing them in a new position.

This item was displayed on the questionnaire as:

Before new employees are  
hired or placed, are they  
required to take a medical  
examination?

1

2

3

4

5

**Notes**

A medical examination in this inquiry was defined as those lists, procedures, or observations of a worker's health status performed by or under the supervision of a physician. This could range from a physician interview to a comprehensive physical examination involving lab tests.

Examinations by a worker's private physician are included if the results are submitted to facility management. Sight or audio screening tests are also included if the results are reviewed by a physician, and records are submitted to management.

Examinations not performed by, or under the supervision of a physician (including review/evaluation) did not constitute a positive response to this inquiry.

**Analysis**

Three analyses of the responses to question 23 are presented.

- (1) Response 23.2, 23.4, or 23.5 - Pre-placement examinations required for all, production, or selected workers

The estimates of the plants which have required medical examinations prior to hiring or new placement, and workers in those plants (by number and proportion of the totals) are displayed in Figures III-91 and III-92, and Tables III-77 and III-78.

Figure III-91	Pre-placement exams required for all or selected workers (by major industrial group)
Figure III-92	Pre-placement exams required for all or selected workers (by 2-digit SIC)

Table III-77	Number and percent of plants and employees in plants which require a medical examination before hiring or placement (by major industrial group)
Table III-78	Number and percent of plants and employees in plants which require a medical examination before hiring or placement (by 2-digit SIC)

- (2) Response 23.1 or 23.3 - Pre-placement examinations not required, or required only for management personnel

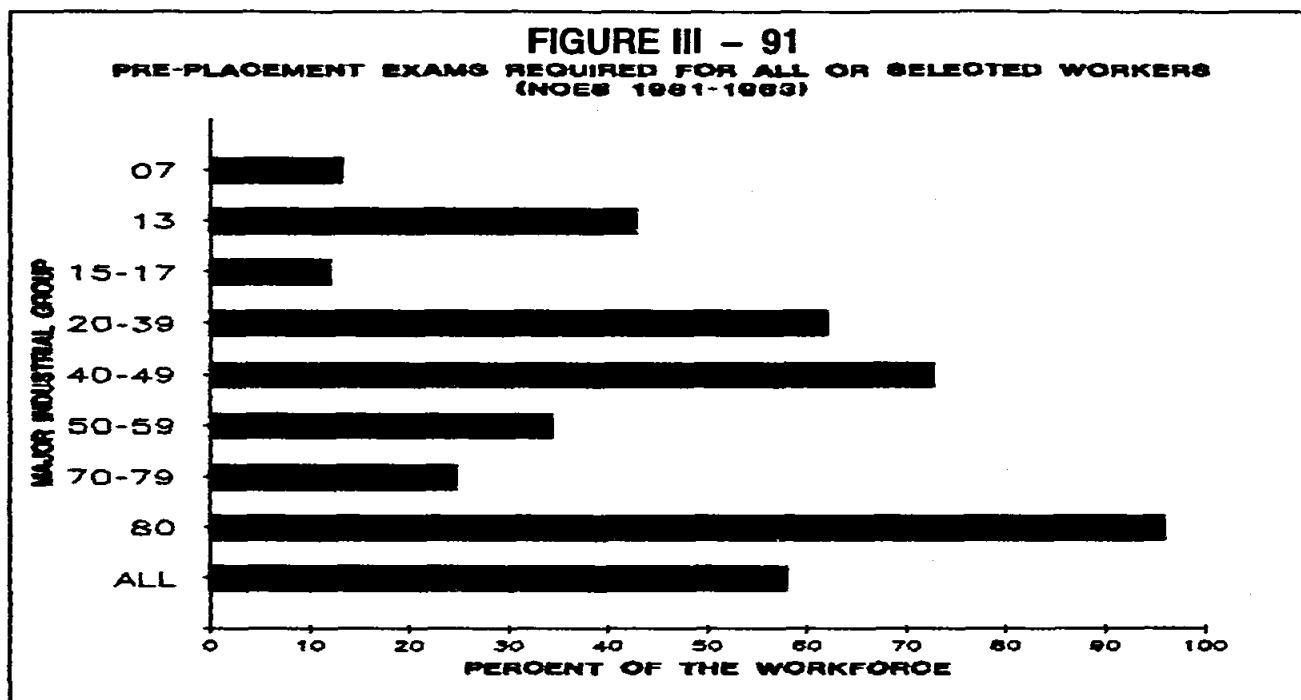
The estimates of the plants which do not require pre-hiring or pre-placement examinations, or require them only for management personnel, and workers in those plants (by number and proportion of the totals) are displayed in Figures III-93 and III-94, and Tables III-79 and III-80.

Figure III-93	Pre-placement exams not required or for management only (by major industrial group)
Figure III-94	Pre-placement exams not required or for management only (by 2-digit SIC)
Table III-79	Number and percent of plants and employees in plants which do not require pre-placement examinations or examine management only (by major industrial group)
Table III-80	Number and percent of plants and employees in plants which do not require pre-placement examinations or examine management only (by 2-digit SIC)

- (3) Response 23.1, 23.2, 23.3, 23.4, or 23.5 - Required pre-hiring or pre-placement examinations

The estimated proportions of plants and workers in those plants corresponding to each of the five possible responses to the pre-placement inquiry are displayed in Figure III-95.

Figure III-95	Provision of pre-placement examinations
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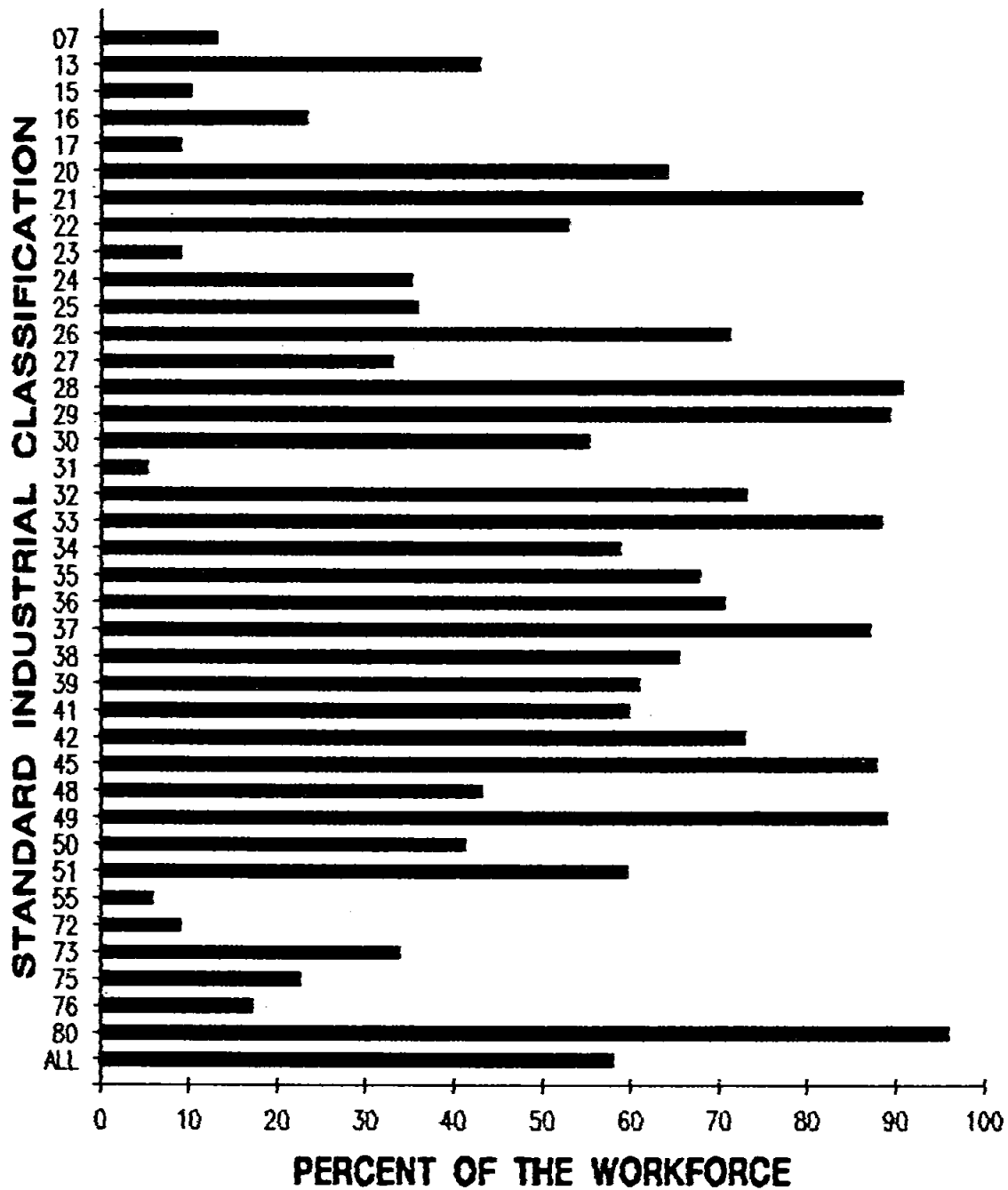
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-77

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
REQUIRE A MEDICAL EXAMINATION BEFORE HIRING OR PLACEMENT

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	313* (253) 5.6%	...	...	313* (253) 5.6%	14788* (13853) 14.3%	...	...	14788* (13853) 13.4%
13	2747* (840) 31.9%	427* (258) 41.9%	46* (52) 100.0%	3219* (960) 33.3%	63544* (22115) 30.4%	83281* (35324) 47.9%	31383* (35291) 100.0%	178208* (67779) 43.0%
15-17	6179 (1340) 6.6%	782* (313) 18.9%	113* (111) 46.7%	7074 (1344) 7.2%	168489* (42532) 8.0%	117617* (53225) 16.0%	91605* (72792) 38.8%	377710* (101195) 12.3%
20-39	32972 (2532) 21.5%	16975 (1335) 53.5%	4868 (238) 77.6%	54814 (3077) 28.7%	1313416 (76296) 28.5%	3584899 (303373) 56.2%	7108770 (242747) 86.0%	12007085 (452507) 62.3%
40-49	25575 (2391) 48.1%	4994 (879) 85.5%	461* (132) 98.5%	31030 (2393) 52.2%	717865 (75011) 50.1%	1026491 (203654) 89.0%	561148 (98952) 97.8%	2305503 (235318) 72.9%
50-59	15528 (2386) 26.6%	1114* (335) 41.9%	...	16642 (2403) 27.3%	374871 (53124) 33.3%	156230* (45509) 38.2%	...	531101 (68656) 34.6%
70-79	9870 (1684) 13.5%	457* (145) 19.5%	186* (120) 52.5%	10512 (1685) 13.9%	225567 (33225) 16.2%	112539* (31273) 24.2%	210856* (111421) 62.1%	548961 (113837) 25.0%
80	1672* (575) 58.9%	1890 (220) 87.2%	2016 (308) 97.8%	5578 (698) 78.9%	71739 (15997) 70.6%	469531 (64315) 87.8%	2973293 (365484) 98.4%	3514563 (357695) 96.1%
ALL	94855 (4853) 21.1%	26637 (1703) 53.3%	7691 (445) 81.5%	129183 (5205) 25.4%	2950278 (134609) 26.6%	5550588 (380495) 56.3%	10977053 (470377) 88.0%	19477919 (648676) 58.3%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
...No facilities observed.

**FIGURE III - 92**  
**PRE-PLACEMENT EXAMS REQUIRED FOR ALL OR SELECTED EMPLOYEES**  
**(NOES 1981-1989)**

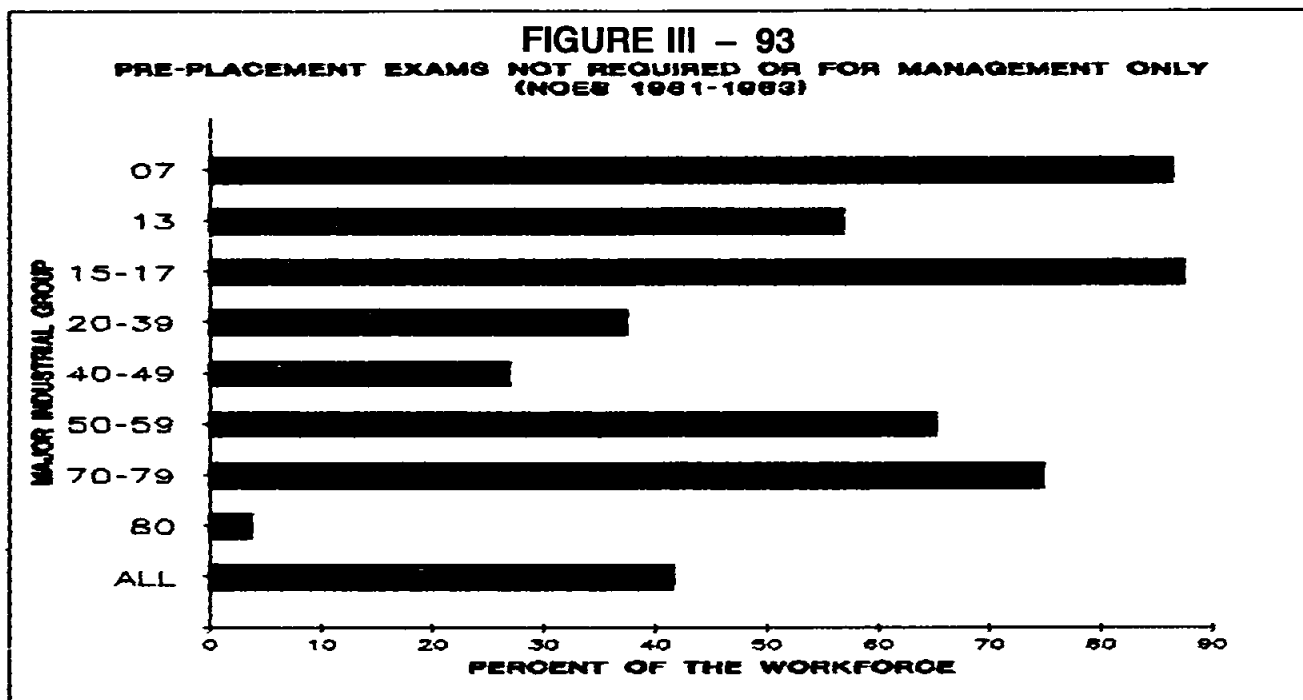


NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
REQUIRE A MEDICAL EXAMINATION BEFORE HIRING OR PLACEMENT

SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	313* (253) 5.6%	...	...	313* (253) 5.6%	14788* (13853) 14.3%	...	...	14788* (13853) 13.4%
13	2747* (840) 31.9%	427* (258) 41.9%	46* (52) 100.0%	3219* (960) 33.3%	63544* (22115) 30.4%	83281* (35324) 47.9%	31383* (35291) 100.0%	178208* (67779) 43.0%
15	846* (498) 3.4%	338* (210) 30.6%	59* (94) 43.6%	1244* (559) 4.8%	12074* (6630) 2.1%	41414* (25520) 20.9%	39479* (62825) 29.3%	92967* (67814) 10.4%
16	1225* (637) 10.9%	344* (222) 30.7%	54* (48) 50.5%	1622* (687) 13.0%	26980* (12434) 9.5%	60668* (43429) 29.2%	52126* (34529) 51.5%	139773* (57365) 23.6%
17	4108* (1215) 7.1%	100* (71) 5.2%	...	4208* (1208) 7.0%	129435* (42816) 10.3%	15535* (9896) 4.7%	...	144970* (42029) 9.2%
20	4213 (572) 36.9%	2072 (431) 64.4%	346* (110) 61.9%	6630 (776) 43.7%	193111 (23552) 49.7%	474051 (99895) 70.4%	331284* (92619) 67.4%	998446 (99784) 64.3%
21	4* (6) 14.6%	...	54* (34) 68.0%	58* (33) 53.3%	258* (345) 13.8%	...	98088* (66468) 87.5%	98346* (66339) 86.3%
22	333* (146) 11.4%	748 (167) 47.1%	192* (68) 64.2%	1273 (201) 26.4%	15232* (7956) 14.4%	176104 (34203) 50.7%	187924* (90840) 72.0%	379261 (88083) 53.1%
23	139* (105) 1.1%	198* (90) 6.4%	63* (48) 25.9%	400* (123) 2.5%	4610* (3487) 1.1%	47227* (20174) 7.7%	62757* (47716) 30.1%	114594* (45039) 9.2%
24	1743 (404) 16.3%	605* (201) 52.7%	19* (8) 18.1%	2366 (401) 19.8%	83911 (18425) 27.6%	85539* (32696) 46.6%	35767* (18789) 38.7%	205217 (41222) 35.4%
25	875* (335) 21.0%	458 (106) 43.1%	32* (25) 26.7%	1365* (366) 25.5%	26512* (13568) 19.1%	111230 (25632) 43.4%	48937* (30396) 39.8%	186679 (35745) 36.0%
26	1111 (267) 27.0%	1185 (206) 75.6%	136* (65) 63.5%	2432 (366) 41.3%	69399 (13526) 50.4%	215385 (43526) 76.5%	162028* (65914) 78.3%	446812 (84672) 71.4%
27	532* (146) 2.9%	705 (143) 37.7%	184* (80) 58.1%	1420 (229) 7.0%	21854* (5852) 4.6%	156412* (45133) 43.3%	213453* (61018) 61.7%	391719 (84878) 33.1%
28	3752 (450) 60.8%	1025 (139) 88.4%	380 (63) 100.0%	5157 (457) 66.9%	125517 (11426) 69.4%	232426 (38613) 89.1%	476341 (101388) 100.0%	834284 (119347) 90.9%
29	249* (178) 24.6%	293* (125) 100.0%	101* (42) 100.0%	643* (241) 45.8%	17737* (11943) 43.3%	63255* (21394) 100.0%	117545* (70259) 100.0%	198537* (79262) 89.5%
30	1472* (565) 21.9%	764* (234) 49.7%	193* (74) 86.0%	2429* (661) 28.7%	64001* (19908) 28.4%	136640* (45875) 46.4%	216359* (74266) 92.6%	417000 (89613) 55.4%
31	...	33* (35) 5.8%	...	33* (35) 2.1%	...	9755* (10480) 7.2%	...	9755* (10480) 5.5%
32	4070 (1013) 46.3%	813 (138) 80.3%	184* (71) 99.9%	5066 (997) 50.7%	121052 (21334) 51.0%	170980 (32641) 81.6%	128993* (49687) 100.0%	421025 (46935) 73.2%
33	1607 (309) 38.9%	1128 (165) 76.8%	337 (62) 100.0%	3072 (353) 51.7%	80815 (15264) 58.4%	246702 (35819) 79.3%	621499 (82456) 100.0%	949016 (81499) 88.6%

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	5203 (868) 28.1%	2077 (168) 66.5%	223* (87) 64.6%	7503 (905) 34.1%	189761 (31273) 34.2%	439656 (31398) 73.7%	257854* (109707) 73.5%	887272 (123688) 59.0%
35	4193 (852) 18.5%	2077 (210) 61.0%	678 (88) 86.4%	6948 (805) 25.9%	168837 (23596) 27.8%	427110 (36689) 64.6%	1023257 (148162) 91.9%	1619205 (136388) 68.0%
36	1201* (429) 16.9%	1243 (208) 46.3%	661 (160) 84.0%	3105 (501) 29.4%	45759* (11854) 19.9%	286685 (41035) 51.9%	1057454 (201918) 89.4%	1389898 (211070) 70.7%
37	845* (314) 21.3%	629 (131) 52.9%	391 (84) 94.0%	1866 (341) 33.4%	34130* (13964) 26.9%	122646 (29682) 51.3%	1483381 (225099) 98.0%	1640157 (231523) 87.2%
38	298* (174) 11.1%	590 (147) 61.6%	358* (118) 86.2%	1246 (237) 30.7%	15056* (8829) 14.4%	107559* (34359) 55.3%	376478* (115179) 81.8%	499092 (118240) 65.7%
39	1132* (383) 17.3%	332* (609) 41.6%	338* (216) 100.0%	1802* (685) 23.4%	35863* (11842) 21.6%	75538* (136540) 50.5%	209369* (120490) 100.0%	320771* (136869) 61.1%
41	2286* (905) 51.7%	412* (154) 80.7%	...	2698* (961) 54.7%	52122* (17623) 44.3%	67320* (33099) 82.6%	...	119442* (41291) 60.0%
42	13042 (1608) 65.1%	1090 (272) 73.5%	75* (46) 91.1%	14207 (1693) 65.8%	340678 (44278) 69.8%	197778* (51904) 76.4%	62234* (31699) 83.2%	600690 (74001) 73.1%
45	657* (293) 20.3%	590* (397) 99.9%	147* (57) 100.0%	1394* (478) 35.1%	23202* (8511) 29.9%	109332* (75829) 100.0%	264255* (77656) 100.0%	396789 (97776) 88.0%
48	2106* (941) 14.3%	819 (162) 90.8%	34* (21) 99.0%	2958* (923) 18.9%	56150* (23059) 13.2%	165695 (37471) 94.0%	70083* (43687) 100.0%	291928 (60376) 43.4%
49	6273* (1577) 76.4%	1613* (531) 86.6%	173* (99) 99.8%	8058 (1779) 78.6%	210647 (51036) 78.2%	392169* (147727) 92.2%	146565* (65566) 100.0%	749381 (175605) 89.1%
50	9125 (1958) 30.1%	877* (269) 48.7%	...	10002 (2065) 31.1%	250084 (52516) 39.7%	129217* (41928) 45.6%	...	379301 (77770) 41.5%
51	5309 (1190) 58.2%	237* (237) 100.0%	...	5546 (1295) 59.3%	100100 (23122) 54.1%	27013* (27013) 100.0%	...	127112* (43996) 59.9%
55	1094* (707) 5.8%	...	...	1094* (707) 5.6%	24687* (20578) 8.0%	...	...	24687* (20578) 6.1%
72	1537* (868) 7.4%	85* (61) 12.6%	...	1622* (855) 7.6%	32064* (17272) 8.4%	11573* (8503) 14.1%	...	43636* (17794) 9.2%
73	3317* (1010) 20.0%	336* (117) 22.6%	186* (120) 54.5%	3839* (1002) 20.9%	74723* (21784) 17.7%	88294* (24191) 25.2%	210856* (111421) 64.1%	373872* (114676) 34.0%
75	4024* (1160) 15.4%	...	...	4024* (1160) 15.3%	96257 (22525) 23.3%	...	...	96257 (22525) 22.8%
76	991* (551) 10.2%	36* (45) 29.4%	...	1028* (542) 10.4%	22524* (10386) 12.6%	12672* (15755) 52.1%	...	35196* (14991) 17.4%
80	1672* (575) 58.9%	1890 (220) 87.2%	2016 (308) 97.8%	5578 (698) 78.9%	71739 (15997) 70.6%	469531 (64315) 87.8%	2973293 (365484) 98.4%	3514563 (357695) 96.1%
A11	93645 (4601) 21.0%	26214 (858) 52.9%	7674 (442) 81.4%	127533 (4519) 25.2%	2915212 (153935) 26.4%	5471998 (169103) 56.0%	10968048 (496563) 88.0%	19355258 (542528) 58.2%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
...No facilities observed.



NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-79

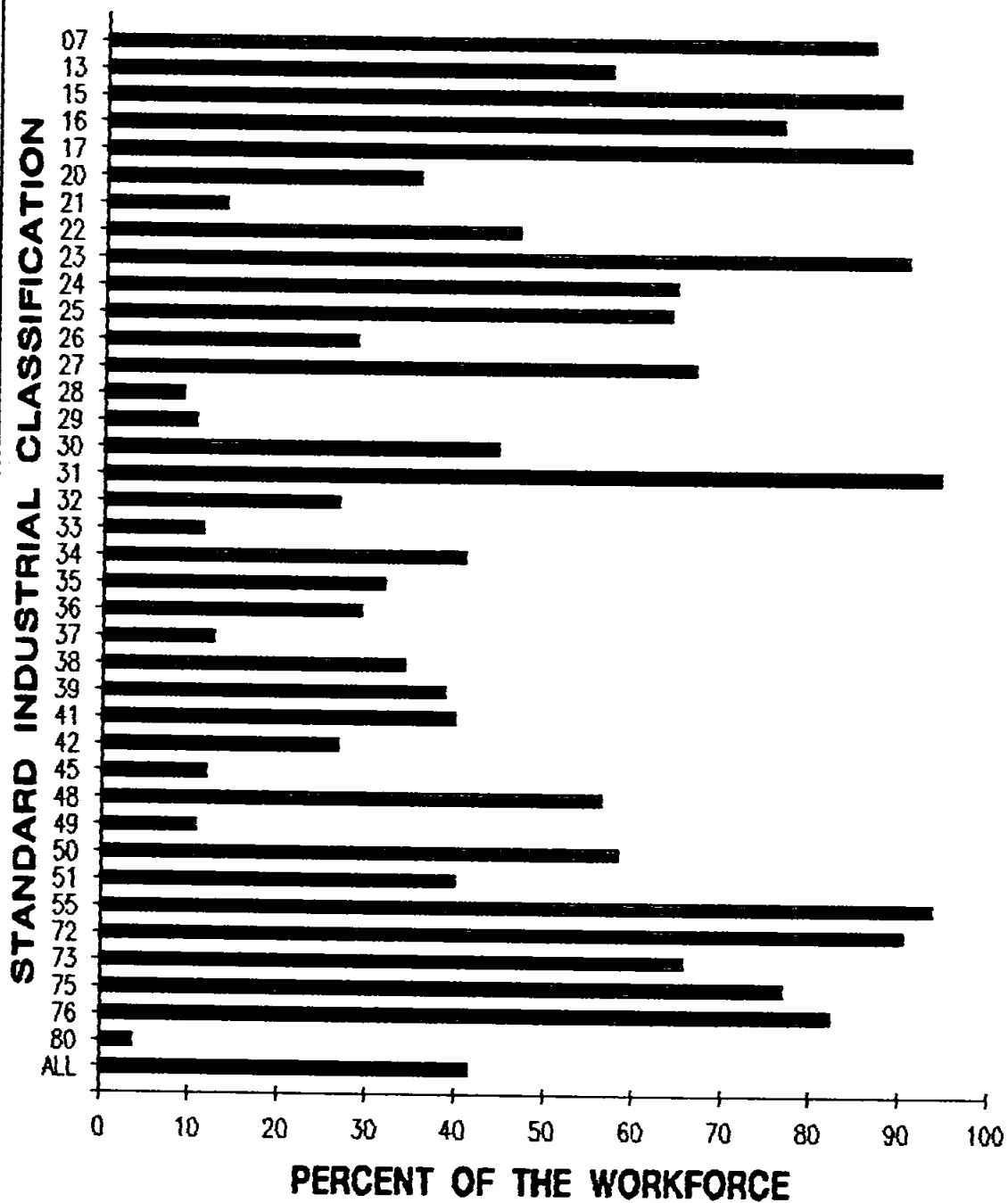
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
DO NOT REQUIRE PRE-PLACEMENT EXAMINATIONS OR EXAMINE MANAGEMENT ONLY

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	5250* (1494) 94.4%	70* (67) 100.0%	...	5320* (1476) 94.5%	88895* (24114) 85.7%	7009* (6680) 100.0%	...	95904 (22430) 86.6%
13	5851* (1504) 68.1%	592* (296) 58.1%	...	6443 (1529) 66.7%	145414* (37317) 69.6%	90662* (45272) 52.1%	...	236076 (53300) 57.0%
15-17	88153 (2058) 93.4%	3363 (509) 81.1%	129* (58) 53.5%	91645 (2171) 92.8%	1930404 (41233) 92.0%	619482 (101135) 84.0%	144452* (54097) 61.2%	2694339 (144559) 87.7%
20-39	120271 (3234) 78.5%	14780 (1124) 46.5%	1401 (145) 22.3%	136452 (3606) 71.3%	3302279 (81055) 71.5%	2795914 (185091) 43.8%	1156551 (122016) 14.0%	7254744 (255628) 37.7%
40-49	27577 (2720) 51.9%	850* (278) 14.5%	7* (17) 1.5%	28434 (2832) 47.8%	716004 (99410) 49.9%	126823* (35457) 11.0%	12595* (30665) 2.2%	855423 (105420) 27.1%
50-59	42864 (3464) 73.4%	1545* (594) 58.1%	...	44409 (3720) 72.7%	749503 (64801) 66.7%	252597* (99129) 61.8%	...	1002100 (138345) 65.4%
70-79	63264 (4165) 86.5%	1889 (314) 80.5%	169* (71) 47.6%	65322 (4158) 86.1%	1167607 (71283) 83.8%	351973 (55651) 75.8%	128705* (49626) 37.9%	1648285 (110911) 75.0%
80	1167* (536) 41.1%	277* (149) 12.8%	45* (38) 2.2%	1488* (530) 21.1%	29906* (12599) 29.4%	64954* (32642) 12.2%	49383* (34084) 1.6%	144242* (43099) 3.9%
ALL	354397 (7498) 78.9%	23366 (1472) 46.7%	1751 (176) 18.5%	379514 (7853) 74.6%	8130012 (171946) 73.4%	4309414 (248651) 43.7%	1491686 (149597) 12.0%	13931112 (366058) 41.7%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.



**FIGURE III - 94**  
**PRE-PLACEMENT EXAMS NOT REQUIRED OR FOR MANAGEMENT ONLY**  
**(NOES 1981-1983)**



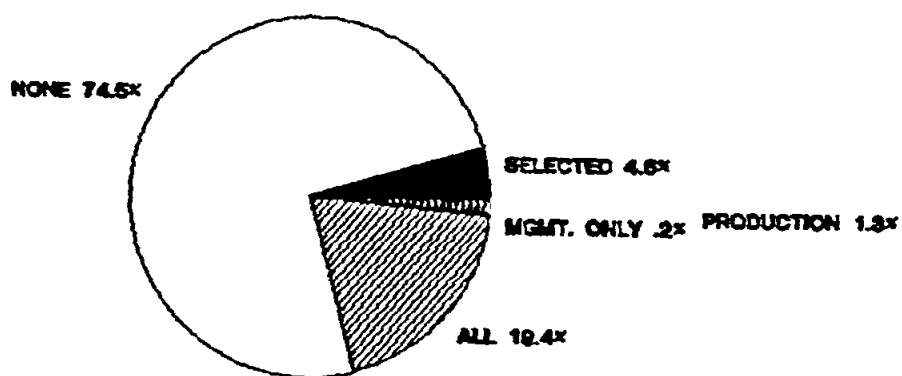
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
DO NOT REQUIRE PRE-PLACEMENT EXAMINATIONS OR EXAMINE MANAGEMENT ONLY

SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	5250* (1494) 94.4%	70* (67) 100.0%	...	5320* (1476) 94.5%	88895* (24114) 85.7%	7009* (6680) 100.0%	...	95904 (22430) 86.6%
13	5851* (1504) 68.1%	592* (296) 58.1%	...	6443 (1529) 66.7%	145414* (37317) 69.6%	90662* (45272) 52.1%	...	236076 (53300) 57.0%
15	24069 (1793) 96.6%	769* (205) 69.4%	76* (30) 56.4%	24914 (1813) 95.2%	550814 (44394) 97.9%	156804* (45181) 79.1%	95320* (26541) 70.7%	802938 (70326) 89.6%
16	10060 (1425) 89.2%	775* (199) 69.3%	53* (41) 49.7%	10888 (1467) 87.0%	257110 (44000) 90.5%	147091* (42962) 70.8%	49132* (38069) 48.5%	453333 (69003) 76.4%
17	54024 (1565) 92.9%	1819 (411) 94.8%	...	55843 (1669) 93.0%	1122480 (39177) 89.7%	315587* (79783) 95.3%	...	1438067 (99359) 90.8%
20	7199 (789) 63.1%	1144 (212) 35.6%	214* (70) 38.2%	8557 (836) 56.3%	195327 (23420) 50.3%	199730 (38884) 29.6%	160491* (53545) 32.6%	555547 (72882) 35.7%
21	26* (42) 86.5%	...	25* (55) 31.6%	51* (68) 46.7%	1608* (2605) 86.2%	...	14045* (31012) 12.5%	15653* (31032) 13.7%
22	2599 (371) 88.6%	840 (141) 52.9%	107* (54) 35.8%	3546 (370) 73.6%	90800 (8732) 85.6%	170969 (26586) 49.3%	73169* (36471) 28.0%	334938 (44092) 46.9%
23	12374 (826) 98.9%	2905 (185) 93.6%	180* (69) 74.2%	15459 (952) 97.5%	419294 (10562) 98.9%	562695 (32647) 92.3%	145680* (52977) 69.9%	1127670 (65856) 90.8%
24	8969 (695) 83.7%	543* (205) 47.3%	85* (73) 82.1%	9597 (746) 80.2%	219735 (20756) 72.4%	98046* (35984) 53.4%	56588* (48232) 61.3%	374369 (84658) 64.6%
25	3289 (572) 79.0%	604 (117) 56.9%	87* (69) 72.9%	3980 (592) 74.5%	112597 (20533) 80.9%	145213 (28964) 56.6%	74060* (55637) 60.2%	331870 (68350) 64.0%
26	3002 (719) 73.0%	383* (144) 24.4%	78* (42) 36.6%	3463 (682) 58.7%	68255 (13349) 49.6%	66091* (32653) 23.5%	44836* (30230) 21.7%	179182 (42288) 28.6%
27	17586 (1019) 97.1%	1168 (149) 62.3%	133* (66) 42.0%	18887 (992) 93.0%	456278 (14729) 95.4%	204491 (29564) 56.7%	132297* (57403) 38.3%	793065 (69884) 66.9%
28	2421 (425) 39.2%	135* (84) 11.7%	...	2556 (411) 33.1%	55222 (10592) 30.6%	28405* (19247) 10.9%	...	83627 (20426) 9.1%
29	762* (371) 75.3%	...	...	762* (371) 54.2%	23244* (13353) 56.7%	...	...	23244* (13353) 10.5%
30	5239 (1021) 78.1%	773* (232) 50.3%	31* (45) 13.9%	6043 (1133) 71.3%	161004 (23049) 71.6%	157890* (49576) 53.6%	17288* (24821) 7.4%	336181 (73014) 44.6%
31	931* (343) 100.0%	536 (126) 94.2%	25* (24) 100.0%	1492* (375) 97.9%	24888* (7207) 100.0%	125704 (31061) 92.8%	15664* (16901) 100.0%	166256 (35757) 94.5%
32	4728 (990) 53.7%	199* (84) 19.7%	...	4928 (995) 49.3%	116108 (18335) 49.0%	38004* (15264) 18.2%	...	154112 (22841) 26.8%
33	2527 (584) 61.1%	340* (149) 23.2%	...	2867 (621) 48.3%	57653* (16316) 41.6%	64379* (28504) 20.7%	...	122032* (30746) 11.4%

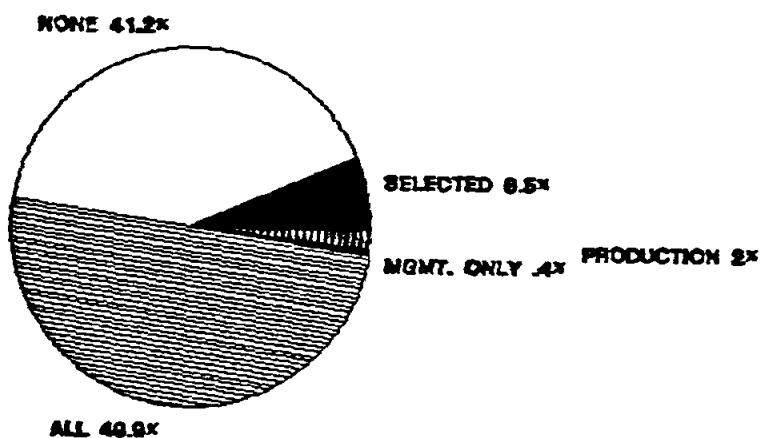
SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	13317 (1309) 71.9%	1045 (221) 33.5%	122* (52) 35.3%	14484 (1321) 65.9%	365124 (34170) 65.8%	157029 (27721) 26.3%	93201* (43769) 26.5%	615354 (65362) 41.0%
35	18457 (1642) 81.5%	1328 (227) 39.0%	106* (63) 13.6%	19892 (1654) 74.1%	437962 (27626) 72.2%	234010 (36685) 35.4%	89676* (55870) 8.1%	761648 (66156) 32.0%
36	5904 (532) 83.1%	1442 (207) 53.7%	126* (68) 16.0%	7472 (526) 70.6%	184729 (15757) 80.1%	265977 (41013) 48.1%	125008* (60534) 10.6%	575714 (73337) 29.3%
37	3128* (805) 78.7%	561* (156) 47.2%	25* (30) 5.9%	3714 (835) 66.6%	92892 (17633) 73.1%	116538* (35028) 48.7%	30627* (29112) 2.0%	240057 (40128) 12.8%
38	2391 (541) 88.9%	367* (124) 38.3%	57* (54) 13.8%	2815 (549) 69.3%	89547 (13413) 85.6%	86834* (34419) 44.7%	83920* (60271) 18.2%	260301* (65850) 34.3%
39	5422 (762) 82.7%	466* (920) 58.3%	...	5888 (1209) 76.6%	130014 (16315) 78.4%	73911* (146692) 49.5%	...	203924* (152448) 38.9%
41	2134 (495) 48.3%	98* (85) 19.2%	...	2232 (546) 45.3%	65511* (21045) 55.7%	14221* (12254) 17.4%	...	79732* (29325) 40.0%
42	6984 (1089) 34.9%	392* (162) 26.5%	7* (17) 8.4%	7384 (1082) 34.2%	147125 (20717) 30.2%	61044* (19466) 23.6%	12595* (30665) 16.8%	220764 (23875) 26.9%
45	2584* (782) 79.7%	...	...	2584* (782) 65.0%	54294* (21107) 70.1%	...	...	54294* (21107) 12.0%
48	12596 (2066) 85.7%	83* (70) 9.2%	...	12679 (2086) 81.1%	369608 (80714) 86.8%	10627* (8916) 6.0%	...	380235 (82674) 56.6%
49	1943* (685) 23.6%	249* (177) 13.4%	...	2192* (732) 21.4%	58723* (20933) 21.8%	33300* (23040) 7.8%	...	92024* (33863) 10.9%
50	21224 (1402) 69.9%	925* (356) 51.4%	...	22150 (1435) 68.9%	380221 (39671) 60.3%	154022* (63812) 54.4%	...	534242 (81568) 58.5%
51	3805* (1293) 41.8%	...	...	3805* (1293) 40.7%	84925* (35355) 45.9%	...	...	84925* (35355) 40.1%
55	17834 (2975) 94.2%	620* (491) 99.9%	...	18454 (3177) 94.4%	284358 (50077) 92.0%	98575* (80174) 100.0%	...	382933* (106887) 93.9%
72	19093 (2493) 92.6%	590* (176) 87.5%	13* (19) 100.0%	19696 (2549) 92.4%	347956 (53082) 91.6%	70647* (22245) 85.9%	10670* (15114) 100.0%	429274 (68726) 90.8%
73	13257 (1616) 80.0%	1153 (209) 77.4%	155* (60) 45.5%	14565 (1519) 79.1%	346724 (37242) 82.3%	261419 (45784) 74.8%	118034* (41548) 35.9%	726178 (60309) 66.0%
75	22155 (3544) 84.6%	59* (60) 99.7%	...	22214 (3551) 84.7%	317019 (55858) 76.7%	8238* (8380) 100.0%	...	325257 (56751) 77.2%
76	8759* (2201) 89.8%	87* (78) 70.8%	...	8847 (2206) 89.6%	155908 (29576) 87.4%	11669* (10488) 47.9%	...	167577 (32712) 82.6%
80	1167* (536) 41.1%	277* (149) 12.8%	45* (38) 2.2%	1488* (530) 21.1%	29906* (12599) 29.4%	64954* (32642) 12.2%	49383* (34084) 1.6%	144242* (43099) 3.9%
All	353060 (7662) 79.0%	23339 (833) 47.1%	1751 (212) 18.6%	378150 (7718) 74.8%	8109269 (160134) 73.6%	4301784 (157557) 44.0%	1491686 (158892) 12.0%	13902738 (219360) 41.8%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE III - 95**  
**PROVISION OF PRE-PLACEMENT EXAMINATIONS**  
**(NOES 1981-1983)**



**PLANTS**



**WORKERS**

**NOES QUESTIONNAIRE ITEM NO. 24**  
**Recording of Health Information On New Employees**

**Intent**

The intent of this question was to determine if the facility recorded health information on new employees on some regular form.

This item was displayed on the questionnaire as:

Do you record health  
information about a  
new employee on some  
regular form?

1

2

3

4

5

**Notes**

Health information refers to any data on employee health, ranging from the results of a complete physical to a simple verbal interview regarding the worker's health, so long as the results are recorded and kept on file.

Acceptable health information may be derived from pre-employment physicals, medical histories, interviews, and from data on existing physical defects.

Information from physiological tests was excluded as a positive response when obtained for other than health reasons.

A regular form is any standardized documentation which is retained in the employee's file or as part of his or her medical history.

Any written record was regarded as a positive response to the question as long as the recording process was consistent for the designated employee group.

**Analysis**

Three analyses of the responses to question 24 are presented.

- (1) Response 24.2, 24.4, or 24.5 - Recording of health information on all, production, or selected workers

The estimates of the plants which record and store health information on all workers, production workers, or selected workers, and workers in those plants (by number and proportion of the totals) are displayed in Figures III-96 and III-97, and Tables III-81 and III-82.

Figure III-96      Health information recorded on all or selected new  
workers            (by major industrial group)

<b>Figure III-97</b>	<b>Health information recorded on all or selected new workers (by 2-digit SIC)</b>
<b>Table III-81</b>	<b>Number and percent of plants and employees in plants which record health information on all or selected workers (by major industrial group)</b>
<b>Table III-82</b>	<b>Number and percent of plants and employees in plants which record health information on all or selected workers (by 2-digit SIC)</b>

- (2) **Response 24.1 or 24.3 - Health information not recorded, or recorded for management personnel only**

The estimates of the plants which either do not record health information, or record it for management personnel only, and the workers in those plants (by number and proportion of the totals) are displayed in Figures III-98 and III-99, and Tables III-83 and III-84.

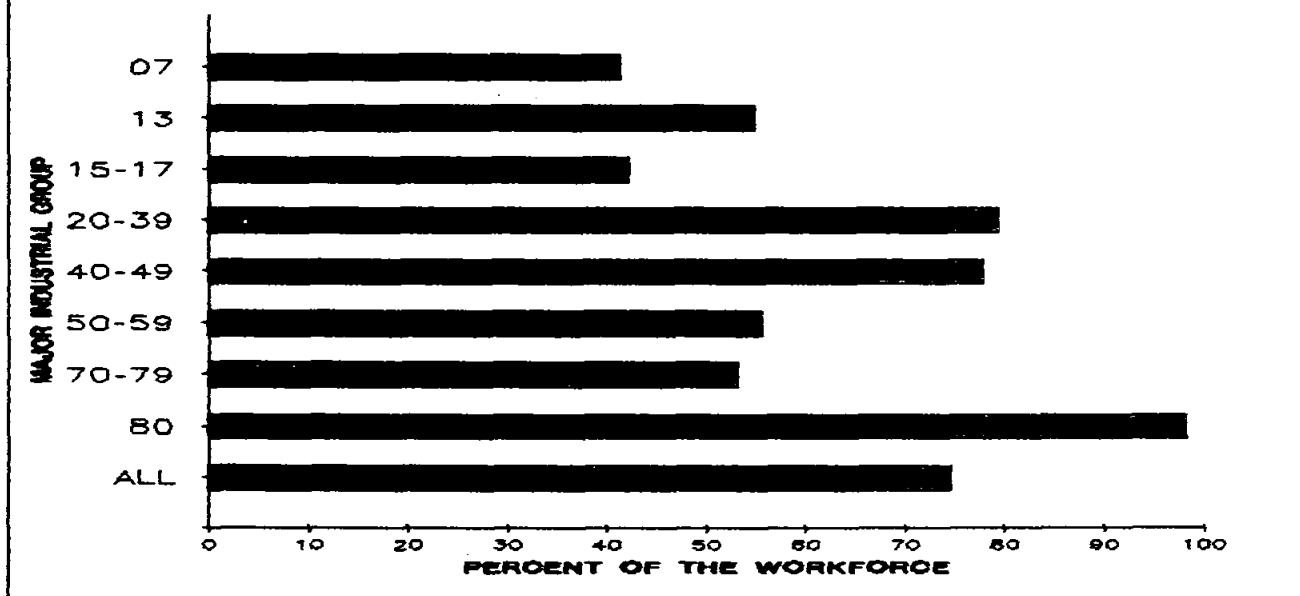
<b>Figure III-98</b>	<b>Health information not recorded or for management only (by major industrial group)</b>
<b>Figure III-99</b>	<b>Health information not recorded or for management only (by 2-digit SIC)</b>
<b>Table III-83</b>	<b>Number and percent of plants and employees in plants which do not record health information or do so only for management (by major industrial group)</b>
<b>Table III-84</b>	<b>Number and percent of plants and employees in plants which do not record health information or do so only for management (by 2-digit SIC)</b>

- (3) **Response 24.1, 24.2, 24.3, 24.4, or 24.5 - Recording of health information**

The estimated proportions of plants and workers in those plants corresponding to each of the five possible responses to the health information inquiry are displayed in Figure III-100.

**Figure III-100 Recording of health information on new workers**

FIGURE III - 96

HEALTH INFORMATION RECORDED ON ALL OR SELECTED NEW WORKERS  
(NOES 1981-1983)

NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-81

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
RECORD HEALTH INFORMATION ON ALL OR SELECTED WORKERS

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	1749* (780) 31.4%	70* (67) 100.0%	...	1819* (756) 32.3%	39015* (15502) 37.6%	7009* (6680) 100.0%	...	46024* (13435) 41.6%
13	4947* (1254) 57.5%	483* (262) 47.4%	46* (52) 100.0%	5475* (1377) 56.7%	103862 (23498) 49.7%	93056* (36604) 53.5%	31383* (35291) 100.0%	228301* (74371) 55.1%
15-17	33768 (3468) 35.8%	1781 (428) 43.0%	180* (132) 74.3%	35729 (3324) 36.2%	809458 (58383) 38.6%	324657 (78376) 44.0%	167205* (98545) 70.8%	1301321 (107709) 42.4%
20-39	78198 (3643) 51.0%	24312 (1626) 76.6%	5383 (251) 85.9%	107893 (4374) 56.4%	2627712 (80923) 56.9%	5045480 (334591) 79.1%	7677651 (330261) 92.9%	15350843 (615437) 79.7%
40-49	32125 (3021) 60.4%	5049 (860) 86.4%	432* (139) 92.3%	37605 (3409) 63.2%	937298 (99740) 65.4%	999344 (185121) 86.6%	532947 (100033) 92.9%	2469589 (259376) 78.1%
50-59	29964 (2972) 51.3%	1499* (401) 56.4%	...	31463 (2978) 51.5%	642390 (62526) 57.1%	215289* (56811) 52.7%	...	857679 (86305) 55.9%
70-79	30355 (3429) 41.5%	1226 (212) 52.3%	239* (139) 67.5%	31820 (3364) 42.0%	646488 (65405) 46.4%	265610 (44864) 57.2%	260525* (123976) 76.7%	1172623 (127525) 53.4%
80	1606* (537) 56.6%	2166 (282) 100.0%	2028 (301) 98.4%	5801 (543) 82.1%	75563* (20801) 74.3%	534485 (79054) 100.0%	2992553 (354376) 99.0%	3602600 (345549) 98.5%
ALL	212710 (7582) 47.3%	36585 (1981) 73.2%	8308 (461) 88.0%	257604 (8047) 50.6%	5881786 (171224) 53.1%	7484930 (406494) 75.9%	11662264 (520565) 93.5%	25028980 (778760) 74.9%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

## NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-82

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
RECORD HEALTH INFORMATION ON ALL OR SELECTED WORKERS

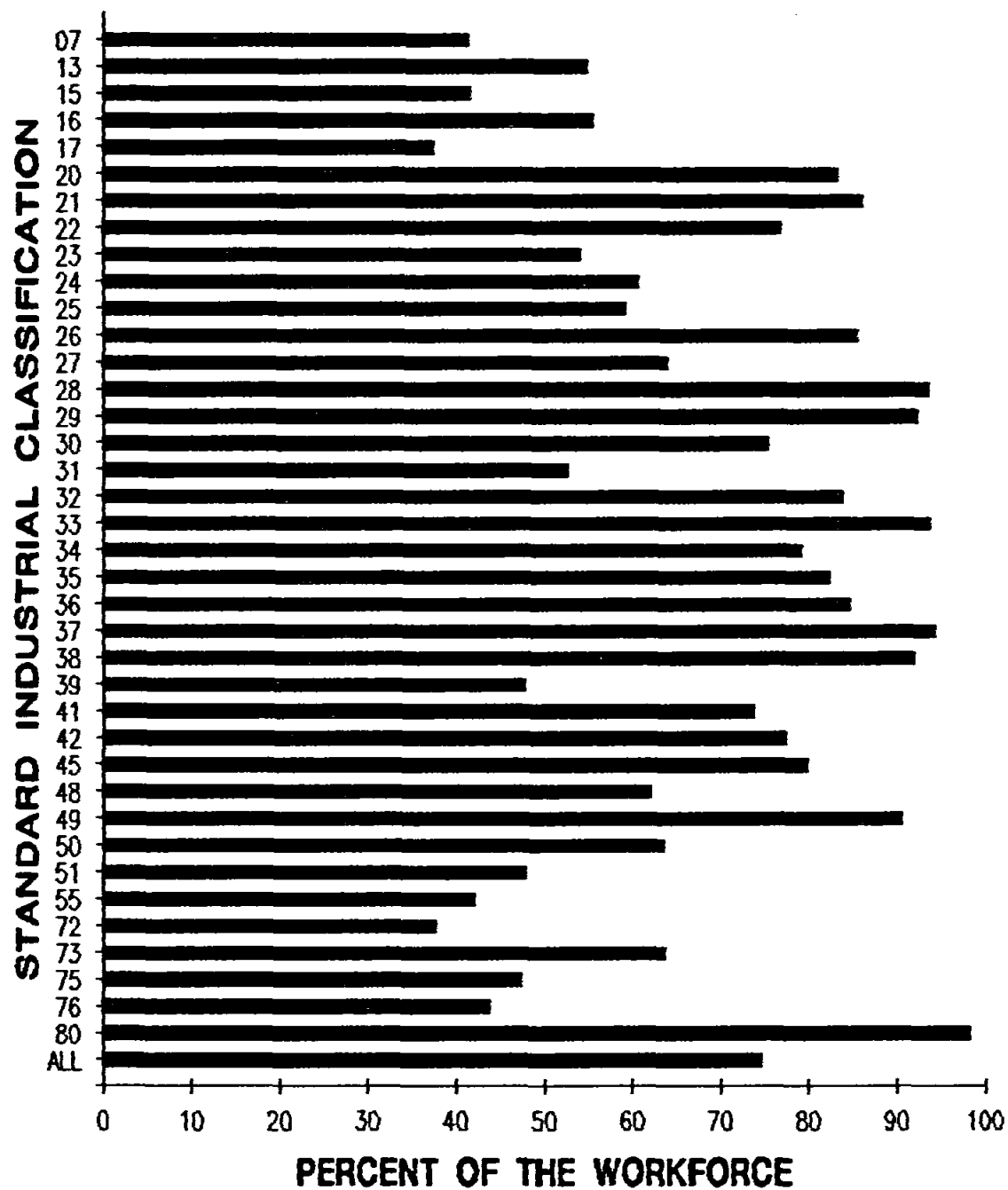
SIC CODE	PLANTS			TOTAL	EMPLOYEES			TOTAL
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)		SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	
07	1749* (780) 31.4%	70* (67) 100.0%	---	1819* (756) 32.3%	39015* (15502) 37.6%	7009* (6680) 100.0%	---	46024* (13435) 41.6%
13	4947* (1254) 57.5%	483* (262) 47.4%	46* (52) 100.0%	5475* (1377) 56.7%	103862 (23498) 49.7%	93056* (36604) 53.5%	31383* (35291) 100.0%	228301* (74371) 55.1%
15	9719 (1326) 39.0%	507* (209) 45.8%	91* (100) 67.6%	10318 (1333) 39.4%	202861 (32522) 36.0%	83988* (31175) 42.4%	87365* (75582) 64.8%	374213 (82181) 41.8%
16	5277 (1041) 46.8%	564* (186) 50.4%	88* (65) 82.7%	5929 (1048) 47.4%	144771 (29032) 51.0%	105741* (39227) 50.9%	79840* (49834) 78.8%	330353 (74272) 55.7%
17	18772 (2441) 32.3%	710* (325) 37.0%	---	19482 (2468) 32.4%	461827 (49949) 36.9%	134928* (65680) 40.7%	---	596755 (76885) 37.7%
20	6780 (854) 59.4%	2458 (446) 76.4%	559 (121) 100.0%	9798 (1004) 64.5%	254578 (21819) 65.5%	550035 (107909) 81.6%	491775 (104930) 100.0%	1296388 (115406) 83.4%
21	4* (6) 14.6%	---	54* (34) 68.0%	58* (33) 53.3%	258* (345) 13.8%	---	98088* (66468) 87.5%	98346* (66339) 86.3%
22	1538 (335) 52.5%	1207 (199) 76.0%	237* (89) 79.4%	2983 (398) 61.9%	53132 (10110) 50.1%	275522 (37992) 79.4%	221425* (101816) 84.8%	550079 (97030) 77.0%
23	3563 (522) 28.5%	1977 (213) 63.7%	127* (68) 52.3%	5667 (567) 35.7%	130666 (19045) 30.8%	405862 (50987) 66.5%	137860* (66849) 66.1%	674388 (85909) 54.3%
24	4483 (619) 41.9%	926 (130) 80.7%	19* (8) 18.1%	5428 (614) 45.4%	175920 (24530) 57.9%	141279 (20341) 77.0%	35767* (18789) 38.7%	352966 (38395) 60.9%
25	1542 (280) 37.0%	755 (178) 71.1%	47* (33) 39.9%	2344 (353) 43.9%	55497 (10186) 39.9%	186245* (48953) 72.6%	66155* (34507) 53.8%	307897 (63531) 59.4%
26	3400 (673) 82.7%	1373 (223) 87.5%	170* (83) 79.4%	4943 (687) 83.8%	112583 (15326) 81.8%	239448 (43361) 85.1%	184036* (67815) 89.0%	536067 (73667) 85.6%
27	7349 (1118) 40.6%	1183 (173) 63.2%	298* (115) 94.2%	8830 (1128) 43.5%	200444 (26461) 41.9%	233214 (44494) 64.6%	326596* (82467) 94.5%	760253 (102178) 64.2%
28	3899 (553) 63.2%	1116 (110) 96.2%	380 (63) 100.0%	5395 (546) 69.9%	128545 (10997) 71.1%	255912 (30212) 98.1%	476341 (101388) 100.0%	860798 (105159) 93.8%
29	318* (203) 31.4%	293* (125) 100.0%	101* (42) 100.0%	712* (263) 50.7%	24252* (15059) 59.2%	63255* (21394) 100.0%	117545* (70259) 100.0%	205052* (80991) 92.5%
30	3819* (1082) 56.9%	1106* (317) 72.0%	211* (69) 94.2%	5136 (1218) 60.6%	136336 (27565) 60.6%	207194* (58842) 70.3%	225743* (70339) 96.6%	569272 (92520) 75.6%
31	97* (60) 10.4%	321* (91) 56.3%	25* (24) 100.0%	442* (123) 29.0%	3879* (2392) 15.6%	73354* (22967) 54.2%	15664* (16901) 100.0%	92897* (28706) 52.8%
32	5183 (832) 58.9%	926 (146) 91.5%	184* (71) 99.9%	6292 (865) 63.0%	161769 (14264) 68.2%	192314 (33123) 92.0%	128993* (49687) 100.0%	483076 (45016) 84.0%
33	2829 (466) 68.4%	1300 (160) 88.6%	337 (62) 100.0%	4466 (479) 75.2%	97756 (13299) 70.6%	287114 (32684) 92.3%	621499 (82456) 100.0%	1006369 (85600) 94.0%



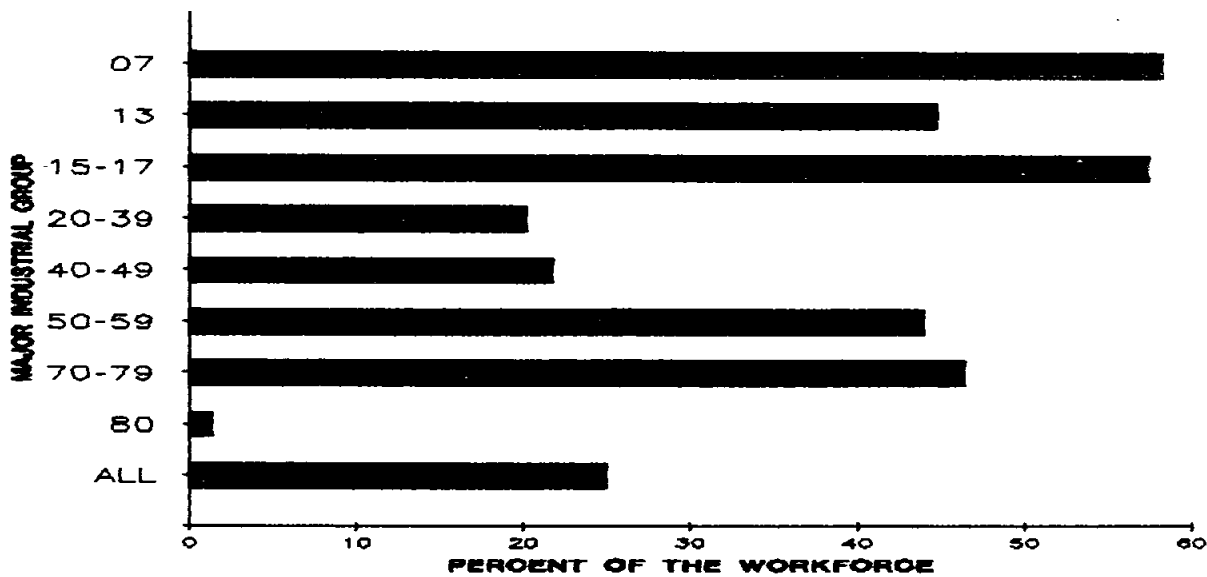
SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	11589 (1211) 62.6%	2392 (187) 76.6%	305* (85) 88.0%	14286 (1195) 65.0%	371057 (27036) 66.9%	496626 (36504) 83.2%	324545* (104665) 92.4%	1192228 (108504) 79.3%
35	10962 (1093) 48.4%	2649 (176) 77.8%	760 (86) 96.9%	14371 (1083) 53.5%	350824 (23527) 57.8%	521715 (32582) 78.9%	1094211 (152021) 98.3%	1966750 (146990) 82.6%
36	2891 (493) 40.7%	2027 (158) 75.5%	712 (167) 90.5%	5630 (569) 53.2%	115784 (15348) 50.2%	445710 (26124) 80.6%	1107363 (194406) 93.6%	1668858 (202497) 84.9%
37	2473 (564) 62.2%	916 (137) 76.9%	416 (92) 99.9%	3804 (530) 68.2%	84790 (19878) 66.8%	177783 (42042) 74.3%	1514008 (247233) 100.0%	1776581 (253442) 94.5%
38	1643 (354) 61.1%	884 (97) 92.4%	406* (136) 97.6%	2933 (437) 72.2%	66788 (12455) 63.9%	183646 (22429) 94.5%	450039* (127797) 97.8%	700474 (138860) 92.2%
39	3835 (660) 58.5%	501* (933) 62.8%	36* (26) 10.7%	4372* (1301) 56.9%	102855 (16896) 62.0%	109251* (206294) 73.1%	39998* (24337) 19.1%	252104* (212211) 48.0%
41	3269 (804) 74.0%	412* (154) 80.7%	...	3681 (822) 74.7%	80116 (19828) 68.1%	67320* (33099) 82.6%	...	147437 (35798) 74.0%
42	13922 (2000) 69.5%	1203* (303) 81.2%	65* (52) 79.5%	15190 (2078) 70.4%	366017 (51422) 75.0%	217380* (58062) 84.0%	53895* (35255) 72.0%	637292 (82063) 77.6%
45	1495* (498) 46.1%	471* (334) 79.9%	147* (57) 100.0%	2114* (628) 53.1%	35099* (12134) 45.3%	61827* (44248) 56.5%	264255* (77656) 100.0%	361181 (82904) 80.1%
48	5035* (1380) 34.2%	819 (162) 90.8%	34* (21) 99.0%	5888 (1396) 37.7%	182728* (58542) 42.9%	165695 (37471) 94.0%	70083* (43687) 100.0%	418507 (84259) 62.3%
49	6741* (1730) 82.1%	1699* (556) 91.2%	153* (100) 88.3%	8593 (1960) 83.8%	231608 (57214) 86.0%	404704* (151048) 95.1%	126704* (65426) 86.4%	763016 (185196) 90.7%
50	15406 (1979) 50.8%	1499* (401) 83.2%	...	16905 (2032) 52.6%	367910 (58790) 58.4%	215289* (56811) 76.0%	...	583199 (90702) 63.8%
51	4733 (901) 51.9%	...	...	4733 (901) 50.6%	102236 (23822) 55.3%	...	...	102236 (23822) 48.2%
55	9825 (2073) 51.9%	...	...	9825 (2073) 50.3%	172244 (42770) 55.7%	...	...	172244 (42770) 42.3%
72	6730 (1599) 32.6%	217* (101) 32.2%	13* (19) 100.0%	6961 (1584) 32.7%	136071 (28338) 35.8%	32354* (16330) 39.4%	10670* (15114) 100.0%	179095 (32377) 37.9%
73	8824 (1702) 53.2%	973 (171) 65.3%	226* (134) 66.1%	10022 (1745) 54.5%	232920 (45495) 55.3%	220583 (35668) 63.1%	249854* (119480) 76.0%	703358 (129321) 63.9%
75	11132* (2874) 42.5%	...	...	11132* (2874) 42.4%	200771 (49372) 48.6%	...	...	200771 (49372) 47.6%
76	3669 (916) 37.6%	36* (45) 29.4%	...	3705 (925) 37.5%	76726 (17012) 43.0%	12672* (15755) 52.1%	...	89398* (23164) 44.1%
80	1606* (537) 56.6%	2166 (282) 100.0%	2028 (301) 98.4%	5801 (543) 82.1%	75563* (20801) 74.3%	534485 (79054) 100.0%	2992553 (354376) 99.0%	3602600 (345549) 98.5%
All	211049 (8436) 47.2%	36188 (1170) 73.0%	8292 (577) 88.0%	255528 (8900) 50.5%	5840057 (170912) 53.0%	7418119 (221155) 75.9%	11653259 (563572) 93.5%	24911435 (760386) 74.9%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE III - 97**  
**HEALTH INFORMATION RECORDED ON ALL OR SELECTED NEW WORKERS**  
**(NOES 1981-1989)**



**FIGURE III - 98**  
**HEALTH INFORMATION NOT RECORDED OR FOR MANAGEMENT ONLY**  
**(NOES 1981-1983)**



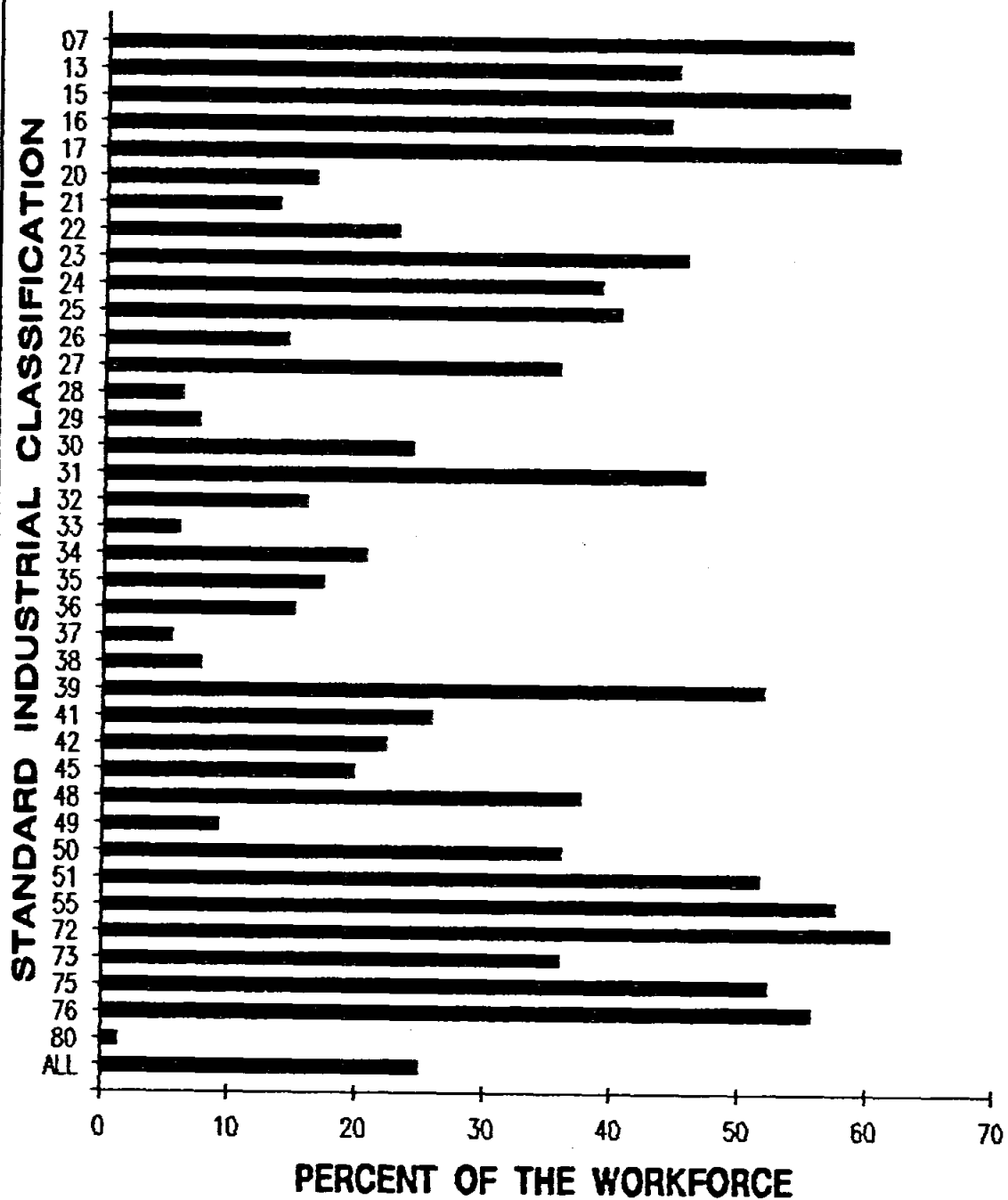
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-83

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
DO NOT RECORD HEALTH INFORMATION OR DO SO ONLY FOR MANAGEMENT

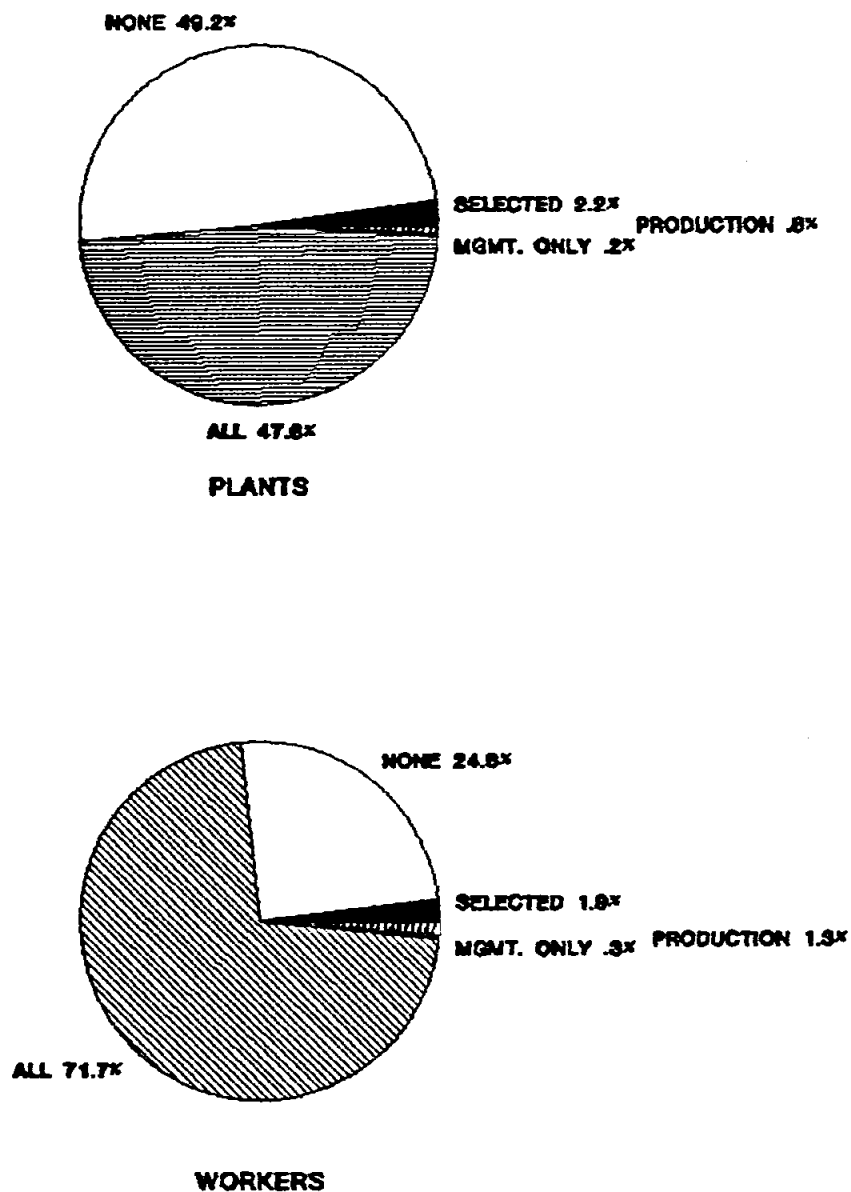
MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	3814* (1046) 68.6%	...	...	3814* (1046) 67.7%	64667* (22212) 62.4%	...	...	64667* (22212) 58.4%
13	3651* (943) 42.5%	536* (286) 52.6%	...	4187 (946) 43.3%	105096 (26142) 50.3%	80887* (43624) 46.5%	...	185983 (46245) 44.9%
15-17	60564 (3144) 64.2%	2364 (380) 57.0%	63* (26) 25.9%	62991 (3142) 63.8%	1289434 (54091) 61.4%	412443 (69497) 56.0%	68852* (30934) 29.2%	1770728 (102516) 57.6%
20-39	75045 (3158) 49.0%	7443 (905) 23.4%	886* (272) 14.1%	83374 (3604) 43.6%	1987983 (72581) 43.1%	1335333 (143906) 20.9%	587669* (156006) 7.1%	3910985 (223383) 20.3%
40-49	21027 (2223) 39.6%	795* (308) 13.6%	36* (26) 7.7%	21859 (2360) 36.8%	496571 (68869) 34.6%	153970* (62624) 13.4%	40796* (35328) 7.1%	691337 (104312) 21.9%
50-59	28428 (2290) 48.7%	1160* (610) 43.6%	...	29588 (2437) 48.5%	481985 (58292) 42.9%	193537* (99337) 47.3%	...	675522 (123755) 44.1%
70-79	42779 (3783) 58.5%	1120 (235) 47.8%	115* (55) 32.6%	44015 (3753) 58.0%	746686 (50368) 53.6%	198902 (38379) 42.8%	79036* (33382) 23.3%	1024624 (73028) 46.6%
80	1233* (549) 43.4%	...	33* (32) 1.6%	1266* (547) 17.9%	26082* (10927) 25.7%	...	30123* (28846) 1.0%	56205* (30309) 1.5%
ALL	236542 (6830) 52.7%	13418 (1252) 26.8%	1134 (281) 12.0%	251093 (7124) 49.4%	5198504 (142013) 46.9%	2375072 (206650) 24.1%	806475 (168788) 6.5%	8380051 (309014) 25.1%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
...No facilities observed.

**FIGURE III - 99**  
**HEALTH INFORMATION NOT RECORDED OR FOR MANAGEMENT ONLY**  
**(NOES 1981-1983)**



**FIGURE III - 100**  
**RECORDING OF HEALTH INFORMATION ON NEW WORKERS**  
**(NOES 1981-1983)**



NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
DO NOT RECORD HEALTH INFORMATION OR DO SO ONLY FOR MANAGEMENT

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	3814* (1046) 68.6%	...	...	3814* (1046) 67.7%	64667* (22212) 62.4%	...	...	64667* (22212) 58.4%
13	3651* (943) 42.5%	536* (286) 52.6%	...	4187 (946) 43.3%	105096 (26142) 50.3%	80887* (43624) 46.5%	...	185983 (46245) 44.9%
15	15197 (1661) 61.0%	600* (207) 54.2%	44* (25) 32.5%	15840 (1683) 60.6%	360027 (42089) 64.0%	114230* (40414) 57.6%	47434* (26853) 35.2%	521692 (63240) 58.2%
16	6007 (1134) 53.2%	555* (161) 49.6%	19* (18) 17.5%	6581 (1151) 52.6%	139318 (30436) 49.0%	102018* (35492) 49.1%	21418* (20949) 21.2%	262754 (49814) 44.3%
17	39361 (2475) 67.7%	1209 (261) 63.0%	...	40569 (2480) 67.6%	790089 (51429) 63.1%	196194 (42237) 59.3%	...	986283 (73331) 62.3%
20	4632 (606) 40.6%	757* (208) 23.5%	...	5389 (635) 35.5%	133860 (20735) 34.5%	123745* (31973) 18.4%	...	257605 (33356) 16.6%
21	26* (42) 86.5%	...	25* (55) 31.6%	51* (68) 46.7%	1608* (2605) 86.2%	...	14045* (31012) 12.5%	15653* (31032) 13.7%
22	1394 (287) 47.5%	381* (142) 24.0%	61* (62) 20.5%	1836 (358) 38.1%	52901 (9876) 49.9%	71551* (25383) 20.6%	39668* (41674) 15.2%	164120* (55658) 23.0%
23	8950 (920) 71.5%	1125 (230) 36.3%	116* (56) 47.9%	10191 (991) 64.3%	293238 (19227) 69.2%	204060 (44913) 33.5%	70577* (35240) 33.9%	567875 (64889) 45.7%
24	6228 (909) 58.1%	221* (130) 19.3%	85* (73) 82.1%	6535 (929) 54.6%	127727 (19998) 42.1%	42306* (23681) 23.0%	56588* (48232) 61.3%	226620 (55303) 39.1%
25	2623 (495) 63.0%	306* (122) 28.9%	71* (70) 59.7%	3000 (568) 56.1%	83612 (15773) 60.1%	70197* (35398) 27.4%	56843* (56040) 46.2%	210653* (69037) 40.6%
26	713* (434) 17.3%	196* (116) 12.5%	44* (37) 20.7%	953* (418) 16.2%	25070* (13278) 18.2%	42028* (30950) 14.9%	22829* (18998) 11.0%	89927* (35577) 14.4%
27	10769 (1177) 59.4%	690 (152) 36.8%	19* (25) 5.9%	11477 (1168) 56.5%	277688 (28534) 58.1%	127689* (32178) 35.4%	19154* (25677) 5.5%	424530 (58130) 35.8%
28	2273 (473) 36.8%	45* (51) 3.9%	...	2318 (482) 30.1%	52194 (9497) 28.9%	4919* (5595) 1.9%	...	57113 (11811) 6.2%
29	693* (356) 68.6%	...	...	693* (356) 49.3%	16728* (9217) 40.8%	...	...	16728* (9217) 7.5%
30	2892 (678) 43.1%	431* (141) 28.0%	13* (16) 5.7%	3335 (691) 39.4%	88668 (19348) 39.4%	87336* (37096) 29.7%	7904* (9778) 3.4%	183908 (41690) 24.4%
31	834* (338) 89.6%	248* (95) 43.7%	...	1083* (367) 71.0%	21009* (7113) 84.4%	62105* (24187) 45.8%	...	83114* (27312) 47.2%
32	3615 (886) 41.1%	87* (50) 8.6%	...	3702 (902) 37.0%	75391 (14985) 31.8%	16670* (11996) 8.0%	...	92061 (22603) 16.0%
33	1305* (428) 31.6%	168* (119) 11.4%	...	1473* (466) 24.8%	40712 (9397) 29.4%	23967* (18025) 7.7%	...	64679* (20436) 6.0%

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	6931 (1008) 37.4%	729* (231) 23.4%	41* (33) 11.8%	7702 (1054) 35.0%	183829 (27509) 33.1%	100059* (26528) 16.8%	26510* (21189) 7.6%	310398 (40156) 20.7%
35	11688 (1264) 51.6%	756 (168) 22.2%	24* (25) 3.1%	12468 (1271) 46.5%	255976 (25042) 42.2%	139405 (32576) 21.1%	18722* (19692) 1.7%	414103 (40541) 17.4%
36	4213 (695) 59.3%	658* (165) 24.5%	75* (41) 9.6%	4946 (695) 46.8%	114704 (13579) 49.8%	106952 (26089) 19.4%	75099* (36930) 6.4%	296754 (38342) 15.1%
37	1500* (575) 37.8%	275* (146) 23.1%	...	1775* (600) 31.8%	42232* (12426) 33.2%	61401* (35187) 25.7%	...	103633* (34241) 5.5%
38	1046* (443) 38.9%	72* (40) 7.6%	10* (16) 2.4%	1128* (443) 27.8%	37814* (12600) 36.2%	10747* (5910) 5.5%	10358* (16947) 2.2%	58919* (18481) 7.8%
39	2718* (723) 41.5%	297* (618) 37.2%	302* (226) 89.3%	3317* (846) 43.1%	63022 (15623) 38.0%	40198* (81212) 26.9%	169372* (127002) 80.9%	272592* (148241) 52.0%
41	1151* (577) 26.0%	98* (85) 19.2%	...	1249* (609) 25.3%	37516* (19565) 31.9%	14221* (12254) 17.4%	...	51738* (26577) 26.0%
42	6105 (977) 30.5%	279* (166) 18.8%	16* (16) 20.0%	6400 (989) 29.6%	121786 (20612) 25.0%	41442* (23686) 16.0%	20935* (28848) 28.0%	184163 (20390) 22.4%
45	1746* (657) 53.9%	118* (118) 20.0%	...	1864* (666) 46.9%	42398* (19968) 54.7%	47505* (47505) 43.5%	...	89903* (53390) 19.9%
48	9666 (1686) 65.7%	83* (70) 9.2%	...	9749 (1693) 62.3%	243030 (49079) 57.1%	10627* (8916) 6.0%	...	253656 (50315) 37.7%
49	1474* (623) 17.9%	164* (165) 8.8%	20* (23) 11.5%	1658* (670) 16.2%	37762* (17253) 14.0%	20766* (20968) 4.9%	19861* (23289) 13.6%	78388* (37277) 9.3%
50	14943 (1610) 49.2%	303* (174) 16.8%	...	15246 (1667) 47.4%	262395 (37959) 41.6%	67950* (45659) 24.0%	...	330345 (66635) 36.2%
51	4381* (1161) 48.1%	237* (237) 100.0%	...	4618 (1118) 49.4%	82789* (32512) 44.7%	27013* (27013) 100.0%	...	109802* (40941) 51.8%
55	9104 (1848) 48.1%	620* (491) 99.9%	...	9723 (1960) 49.7%	136801 (34171) 44.3%	98575* (80174) 100.0%	...	235376* (89117) 57.7%
72	13899 (2596) 67.4%	458* (152) 67.9%	...	14357 (2601) 67.3%	243949 (46632) 64.2%	49866* (16344) 60.6%	...	293815 (49323) 62.1%
73	7751 (1844) 46.8%	516* (142) 34.7%	115* (55) 33.8%	8382 (1791) 45.5%	188527 (37013) 44.7%	129130 (32162) 36.9%	79036* (33382) 24.0%	396693 (48630) 36.1%
75	15048 (2615) 57.5%	59* (60) 99.7%	...	15107 (2628) 57.6%	212504 (37766) 51.4%	8238* (8380) 100.0%	...	220742 (39729) 52.4%
76	6082* (2016) 62.4%	87* (78) 70.8%	...	6169* (2023) 62.5%	101706* (28928) 57.0%	11669* (10488) 47.9%	...	113375* (32412) 55.9%
80	1233* (549) 43.4%	...	33* (32) 1.6%	1266* (547) 17.9%	26082* (10927) 25.7%	...	30123* (28846) 1.0%	56205* (30309) 1.5%
All	235657 (7542) 52.8%	13364 (1037) 27.0%	1134 (259) 12.0%	250155 (7922) 49.5%	5184423 (158591) 47.0%	2355662 (198337) 24.1%	806475 (146921) 6.5%	8346561 (387606) 25.1%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.





<b>Table III-85</b>	<b>Number and percent of plants and employees in plants which require post-illness examinations of all or selected workers (by major industrial group)</b>
<b>Table III-86</b>	<b>Number and percent of plants and employees in plants which require post-illness examinations of all or selected workers (by 2-digit SIC)</b>

- (2) **Response 25.1 or 25.3 - Post-illness medical examinations not required, or required for management personnel only**

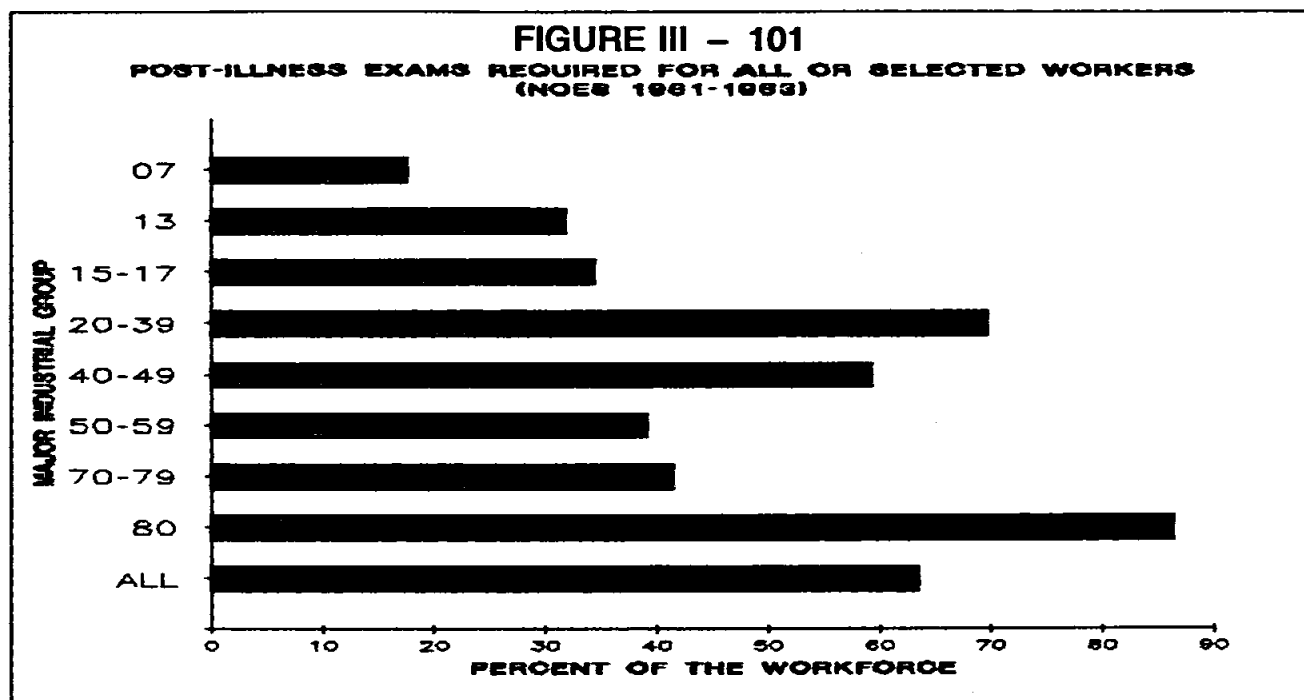
The estimates of the plants which either do not require post-illness medical examinations or require them only for management personnel, and workers in those plants (by number and proportion of the totals) are displayed in Figure III-103 and III-104, and Tables III-87 and III-88.

<b>Figure III-103</b>	<b>Post-illness exams not required or for management only (by major industrial group)</b>
<b>Figure III-104</b>	<b>Post-illness exams not required or for management only (by 2-digit SIC)</b>
<b>Table III-87</b>	<b>Number and percent of plants and employees in plants which do not require post-illness examinations or examine management only (by major industrial group)</b>
<b>Table III-88</b>	<b>Number and percent of plants and employees in plants which do not require post-illness examinations or examine management only (by 2-digit SIC)</b>

- (3) **Response 25.1, 25.2, 25.3, 25.4, or 25.5 - Required post-illness medical examinations**

The estimated proportions of plants and workers in those plants corresponding to each of the five possible responses to the post-illness examination inquiry are displayed in Figure III-105.

<b>Figure III-105</b>	<b>Post-illness examination required</b>
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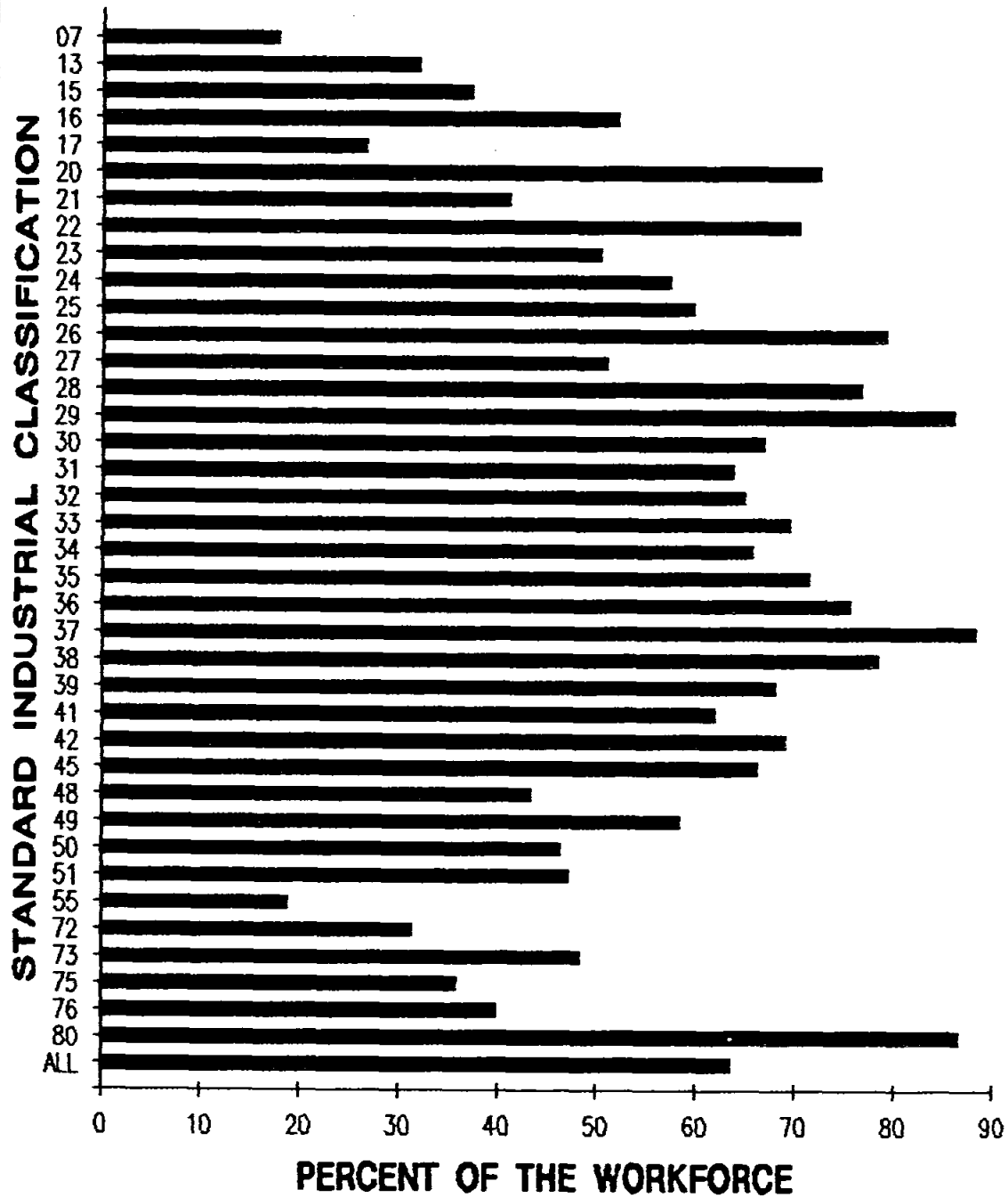
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-85

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 REQUIRE POST-ILLNESS EXAMINATIONS OF ALL OR SELECTED WORKERS

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	948* (640) 17.0%	70* (67) 100.0%	...	1018* (630) 18.1%	12769* (7825) 12.3%	7009* (6680) 100.0%	...	19778* (9352) 17.9%
13	3213* (888) 37.4%	287* (247) 28.1%	...	3499* (976) 36.2%	91553 (18671) 43.8%	41529* (29940) 23.9%	...	133082* (37914) 32.1%
15-17	26148 (2728) 27.7%	1423 (282) 34.3%	185* (130) 76.3%	27755 (2798) 28.1%	602294 (63177) 28.7%	268930 (55091) 36.5%	196027* (97774) 83.0%	1067252 (143949) 34.7%
20-39	57183 (2725) 37.3%	21717 (1302) 68.4%	4980 (329) 79.4%	83880 (3406) 43.9%	2006452 (72841) 43.5%	4486925 (279994) 70.3%	6991382 (270677) 84.6%	13484759 (446049) 70.0%
40-49	23550 (2188) 44.3%	4079 (736) 69.8%	332* (112) 70.9%	27961 (2289) 47.0%	739195 (79182) 51.6%	764043 (153166) 66.2%	379761 (76400) 66.2%	1882998 (194492) 59.6%
50-59	17292 (2540) 29.6%	1584* (509) 59.6%	...	18876 (2524) 30.9%	370452 (52556) 32.9%	232595* (71551) 56.9%	...	603047 (95620) 39.3%
70-79	20331 (2816) 27.8%	1257 (239) 53.6%	238* (119) 67.3%	21826 (2770) 28.8%	419728 (50073) 30.1%	262717 (47594) 56.6%	233549* (106104) 68.8%	915994 (106290) 41.7%
80	1708* (573) 60.2%	1413 (253) 65.2%	1821 (292) 88.4%	4942 (611) 69.9%	78710 (17922) 77.4%	355396 (76454) 66.5%	2736713 (366222) 90.5%	3170820 (352402) 86.7%
ALL	150373 (5963) 33.5%	31830 (1662) 63.7%	7556 (487) 80.0%	189758 (6359) 37.3%	4321152 (146859) 39.0%	6419145 (345054) 65.1%	10537432 (483776) 84.5%	21277730 (635343) 63.7%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE III - 102**  
**POST-ILLNESS EXAMS REQUIRED FOR ALL OR SELECTED WORKERS**  
**(NOES 1981-1983)**

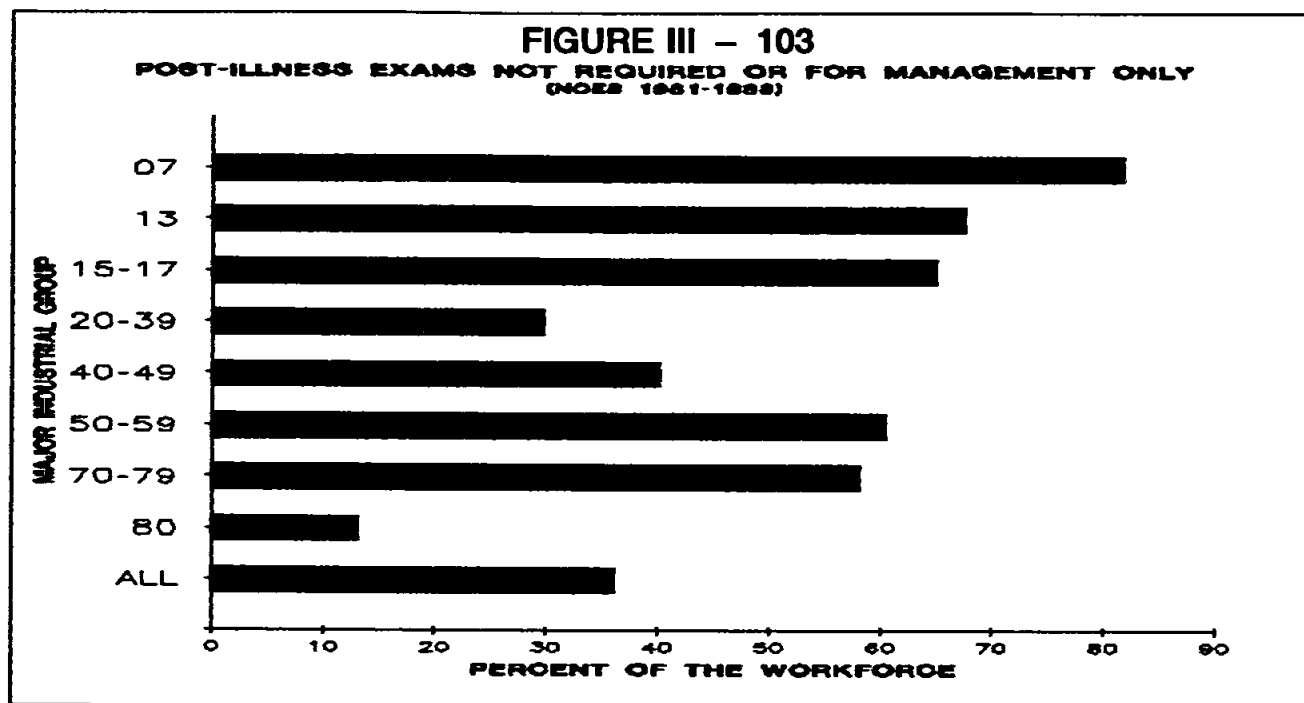


NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
REQUIRE POST-ILLNESS EXAMINATIONS OF ALL OR SELECTED WORKERS

SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	948* (640) 17.0%	70* (67) 100.0%	...	1018* (630) 18.1%	12769* (7825) 12.3%	7009* (6680) 100.0%	...	19778* (9352) 17.9%
13	3213* (888) 37.4%	287* (247) 28.1%	...	3499* (976) 36.2%	91553 (18671) 43.8%	41529* (29940) 23.9%	...	133082* (37914) 32.1%
15	6095 (965) 24.5%	472* (169) 42.6%	95* (99) 70.3%	6662 (991) 25.5%	146303 (28727) 26.0%	82150* (27728) 41.4%	106739* (70903) 79.2%	335192* (87851) 37.4%
16	4425 (1090) 39.2%	508* (188) 45.4%	90* (66) 84.0%	5022 (1082) 40.1%	126569* (32392) 44.6%	93431* (38122) 45.0%	89288* (54040) 88.2%	309288 (70313) 52.1%
17	15628 (1935) 26.9%	443* (202) 23.1%	...	16071 (1979) 26.8%	329423 (42369) 26.3%	93349* (43229) 28.2%	...	422771 (62049) 26.7%
20	5099 (729) 44.7%	2329 (451) 72.4%	474* (133) 84.8%	7903 (898) 52.0%	203565 (25061) 52.4%	502520 (101863) 74.6%	421925* (117022) 85.8%	1128010 (124429) 72.6%
21	30* (43) 100.0%	...	17* (28) 21.6%	47* (47) 43.5%	1866* (2685) 100.0%	...	45151* (41947) 40.3%	47017* (41262) 41.2%
22	769* (273) 26.2%	1209 (149) 76.2%	196* (67) 65.4%	2174 (333) 45.1%	37712* (11442) 35.6%	271543 (30034) 78.2%	195313* (81359) 74.8%	504567 (83678) 70.6%
23	3066 (648) 24.5%	1882 (263) 60.7%	169* (80) 69.8%	5117 (702) 32.3%	123502 (19338) 29.1%	371315 (61893) 60.9%	132489* (67227) 63.6%	627306 (77262) 50.5%
24	3977* (1012) 37.1%	875 (139) 76.2%	92* (75) 88.7%	4944 (1000) 41.3%	121029 (25584) 39.9%	147226 (28141) 80.2%	64733* (51314) 70.1%	332988 (80631) 57.5%
25	1500* (425) 36.0%	792 (191) 74.6%	36* (23) 30.6%	2328 (522) 43.6%	60110* (20214) 43.2%	196420* (49394) 76.6%	53440* (27829) 43.4%	309969 (73359) 59.8%
26	2324 (528) 56.5%	1120 (187) 71.4%	180* (85) 84.2%	3624 (555) 61.5%	88929 (15900) 64.6%	222347 (47833) 79.0%	184857* (74073) 89.4%	496134 (103651) 79.3%
27	4004 (851) 22.1%	1183 (149) 63.2%	214* (80) 67.7%	5402 (875) 26.6%	141967 (27456) 29.7%	219000 (32444) 60.7%	244939* (67607) 70.8%	605906 (84232) 51.1%
28	3192 (489) 51.7%	704 (111) 60.7%	352 (57) 92.6%	4248 (543) 55.1%	96749 (12564) 53.5%	166526 (31364) 63.8%	441972 (97962) 92.8%	705247 (107213) 76.8%
29	165* (144) 16.3%	293* (125) 100.0%	101* (42) 100.0%	560* (216) 39.8%	10182* (9771) 24.8%	63255* (21394) 100.0%	117545* (70259) 100.0%	190982* (79819) 86.1%
30	3352 (732) 49.9%	938* (364) 61.0%	180* (67) 80.3%	4470 (933) 52.8%	119944 (20551) 53.3%	176250* (71151) 59.8%	208455* (70884) 89.2%	504649 (100102) 67.0%
31	320* (207) 34.4%	378* (95) 66.4%	25* (24) 100.0%	724* (247) 47.4%	9466* (5547) 38.0%	87414* (24607) 64.5%	15664* (16901) 100.0%	112545* (30966) 63.9%
32	3857* (1088) 43.8%	726 (140) 71.8%	151* (65) 81.9%	4734 (1078) 47.4%	114930 (23660) 48.5%	154229 (34313) 73.8%	105011* (44793) 81.4%	374170 (43355) 65.1%
33	1537 (379) 37.2%	740* (186) 50.4%	240* (78) 71.1%	2517 (458) 42.4%	59525 (13460) 43.0%	181145 (42235) 58.2%	504942 (113715) 81.2%	745612 (137306) 69.6%

SIC CODE					EMPLOYEES			
	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	7377 (1037) 39.6%	2287 (195) 73.3%	247* (86) 71.4%	9912 (1039) 45.1%	258232 (25974) 46.5%	456013 (30008) 76.4%	275392* (102333) 78.4%	989636 (103314) 65.9%
35	8061 (1254) 35.6%	2492 (239) 73.2%	646 (89) 82.4%	11199 (1278) 41.7%	264603 (22749) 43.6%	457040 (41646) 69.1%	983325 (143103) 88.4%	1704969 (141739) 71.6%
36	3974 (672) 55.9%	1599 (171) 59.5%	613* (166) 77.9%	6186 (680) 58.5%	131202 (15036) 56.9%	357129 (33941) 64.6%	999025 (202447) 84.5%	1487355 (210714) 75.7%
37	1830* (481) 46.1%	1021 (92) 85.8%	365 (83) 87.7%	3216 (501) 57.7%	74070* (19593) 58.3%	214136 (27862) 89.5%	1374777 (222769) 90.8%	1662983 (214052) 88.4%
38	687* (328) 25.6%	690 (133) 72.1%	354* (124) 85.2%	1732 (394) 42.6%	33441* (11742) 32.0%	144536 (30309) 74.4%	419058* (123602) 91.0%	597036 (137260) 78.6%
39	2062 (476) 31.5%	455* (881) 57.0%	328* (221) 97.0%	2844* (941) 37.0%	55429* (14746) 33.4%	98879* (191557) 66.2%	203369* (123186) 97.1%	357678* (181506) 68.2%
41	2335* (753) 52.8%	237* (77) 46.5%	...	2572* (772) 52.2%	80196* (24415) 68.2%	43215* (26171) 53.0%	...	123411* (34668) 62.0%
42	10720 (1710) 53.5%	1205 (271) 81.3%	75* (46) 91.1%	12000 (1738) 55.6%	306340 (53879) 62.8%	200225 (39970) 77.4%	62234* (31699) 83.2%	568800 (67219) 69.2%
45	924* (512) 28.5%	514* (353) 87.1%	86* (43) 58.6%	1524* (605) 38.3%	21974* (10501) 28.4%	101563* (69434) 92.9%	175417* (49150) 66.4%	298954* (83140) 66.3%
48	3561* (1102) 24.2%	679 (136) 75.3%	19* (16) 56.8%	4259* (1156) 27.2%	121217* (49310) 28.5%	135070* (35268) 76.6%	37029* (29526) 52.8%	293316* (76995) 43.6%
49	5065 (1213) 61.7%	999* (367) 53.7%	152* (101) 87.7%	6216 (1371) 60.6%	185299 (45334) 68.8%	201552* (69822) 47.4%	105080* (65971) 71.7%	491931 (118492) 58.5%
50	8874 (1517) 29.2%	1347* (416) 74.7%	...	10221 (1480) 31.8%	219909 (37287) 34.9%	205583* (65763) 72.6%	...	425492 (79700) 46.6%
51	4073 (1008) 44.7%	237* (237) 100.0%	...	4310 (992) 46.1%	73403 (17535) 39.7%	27013* (27013) 100.0%	...	100415* (34371) 47.4%
55	4345* (1210) 23.0%	...	...	4345* (1210) 22.2%	77140* (26271) 25.0%	...	...	77140* (26271) 18.9%
72	5170 (1151) 25.1%	253* (126) 37.5%	...	5423 (1161) 25.4%	115716 (22180) 30.5%	33745* (18218) 41.0%	...	149462 (29179) 31.6%
73	3740 (870) 22.6%	881 (153) 59.2%	238* (119) 69.8%	4859 (836) 26.4%	95061 (21875) 22.6%	204631 (39444) 58.5%	233549* (106104) 71.0%	533241 (103810) 48.5%
75	8166 (1924) 31.2%	...	...	8166 (1924) 31.1%	151903 (34291) 36.8%	...	...	151903 (34291) 36.0%
76	3254* (1133) 33.4%	123* (94) 100.0%	...	3377* (1117) 34.2%	57047* (15632) 32.0%	24341* (19716) 100.0%	...	81388* (25152) 40.1%
80	1708* (573) 60.2%	1413 (253) 65.2%	1821 (292) 88.4%	4942 (611) 69.9%	78710 (17922) 77.4%	355396 (76454) 66.5%	2736713 (366222) 90.5%	3170820 (352402) 86.7%
All	149428 (7560) 33.5%	31432 (989) 63.4%	7556 (387) 80.2%	188416 (7938) 37.3%	4296984 (155394) 39.0%	6352334 (203115) 65.0%	10537432 (474101) 84.6%	21186750 (564214) 63.7%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.



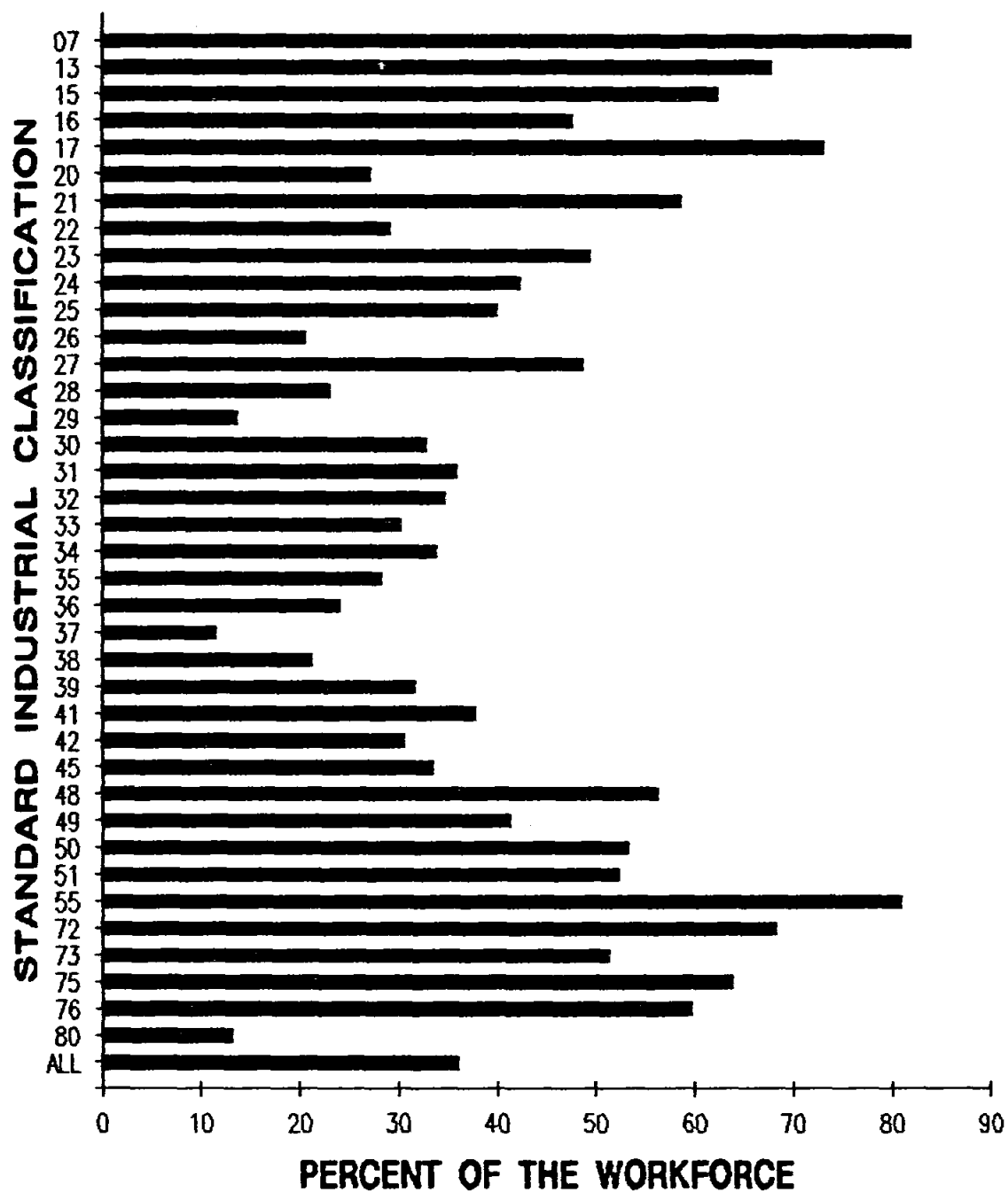
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-87

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
DO NOT REQUIRE POST-ILLNESS EXAMINATIONS OR EXAMINE MANAGEMENT ONLY

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	4615 (1148) 83.0%	...	...	4615 (1148) 81.9%	90913* (26337) 87.7%	...	...	90913* (26337) 82.1%
13	5384 (1346) 62.6%	732* (289) 71.8%	46* (52) 100.0%	6163 (1382) 63.8%	117405 (27382) 56.2%	132414* (50581) 76.1%	31383* (35291) 100.0%	281202* (70310) 67.9%
15-17	68184 (2979) 72.3%	2722 (468) 65.7%	58* (36) 23.8%	70964 (3121) 71.9%	1496598 (62259) 71.3%	468169 (82755) 63.5%	40030* (25656) 17.0%	2004797 (119295) 65.3%
20-39	96059 (2791) 62.7%	10038 (1276) 31.6%	1289 (254) 20.6%	107386 (3268) 56.1%	2609243 (73116) 56.5%	1893888 (253357) 29.7%	1273938 (200712) 15.4%	5777070 (411136) 30.0%
40-49	29602 (2838) 55.7%	1764* (470) 30.2%	136* (63) 29.1%	31503 (3181) 53.0%	694674 (83509) 48.4%	389271* (126673) 33.8%	193982* (77035) 33.8%	1277928 (186770) 40.4%
50-59	41100 (3210) 70.4%	1075* (501) 40.4%	...	42175 (3184) 69.1%	753922 (71145) 67.1%	176231* (83150) 43.1%	...	930154 (99926) 60.7%
70-79	52803 (3572) 72.2%	1089 (193) 46.4%	116* (68) 32.8%	54008 (3574) 71.2%	973447 (58748) 69.9%	201795 (42607) 43.4%	106012* (58984) 31.2%	1281253 (82299) 58.3%
80	1131* (488) 39.8%	753 (174) 34.8%	240 (59) 11.7%	2125* (561) 30.1%	22934* (10382) 22.6%	179088 (38824) 33.5%	285963 (60970) 9.5%	487985 (73564) 13.3%
ALL	298880 (7152) 66.5%	18173 (1572) 36.3%	1886 (284) 20.0%	318939 (7549) 62.7%	6759137 (162049) 61.0%	3440857 (316037) 34.9%	1931307 (235201) 15.5%	12131301 (495938) 36.3%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE III - 104**  
**POST-ILLNESS EXAMS NOT REQUIRED OR FOR MANAGEMENT ONLY**  
**(NOES 1981-1983)**



NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
DO NOT REQUIRE POST-ILLNESS EXAMINATIONS OR EXAMINE MANAGEMENT ONLY

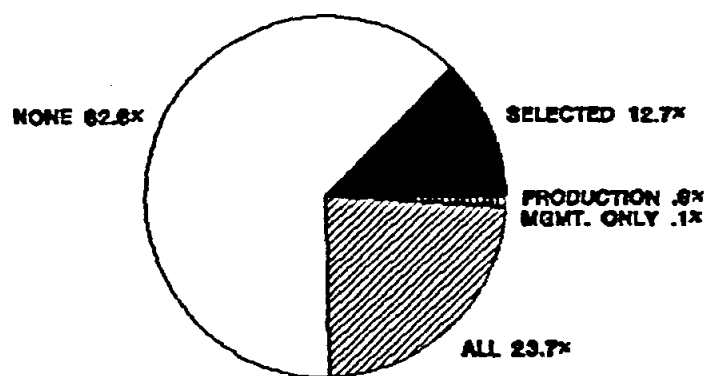
SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	4615 (1148) 83.0%	...	...	4615 (1148) 81.9%	90913* (26337) 87.7%	...	...	90913* (26337) 82.1%
13	5384 (1346) 62.6%	732* (289) 71.8%	46* (52) 100.0%	6163 (1382) 63.8%	117405 (27382) 56.2%	132414* (50581) 76.1%	31383* (35291) 100.0%	281202* (70310) 67.9%
15	18821 (1640) 75.5%	635* (188) 57.4%	40* (25) 29.8%	19496 (1672) 74.5%	416585 (42893) 74.0%	116068* (35048) 58.6%	28060* (17429) 20.8%	560713 (65500) 62.6%
16	6860 (1026) 60.8%	611* (155) 54.6%	17* (30) 16.3%	7488 (1066) 59.9%	157520 (26160) 55.4%	114328* (35129) 55.0%	11970* (20913) 11.8%	283818 (47629) 47.9%
17	42504 (2125) 73.1%	1476 (334) 76.9%	...	43980 (2230) 73.2%	922493 (42629) 73.7%	237773 (57765) 71.8%	...	1160266 (84890) 73.3%
20	6313 (901) 55.3%	886* (255) 27.6%	85* (54) 15.3%	7285 (1038) 48.0%	184873 (25393) 47.6%	171260* (57724) 25.4%	69850* (44995) 14.2%	425984 (79792) 27.4%
21	...	...	62* (46) 78.0%	62* (46) 56.5%	...	...	66982* (42632) 59.7%	66982* (42632) 58.8%
22	2163 (386) 73.8%	379* (113) 23.9%	103* (64) 34.5%	2645 (417) 54.9%	68321 (12245) 64.4%	75530* (26343) 21.8%	65780* (41335) 25.2%	209631* (54281) 29.4%
23	9447 (1072) 75.5%	1220 (254) 39.3%	74* (58) 30.4%	10741 (1179) 67.7%	300402 (22475) 70.9%	238607 (55636) 39.1%	75948* (47972) 36.4%	614957 (86698) 49.5%
24	6735 (1058) 62.9%	272* (141) 23.7%	12* (10) 11.5%	7019 (1044) 58.7%	182618 (25265) 60.1%	36359* (21091) 19.8%	27621* (22969) 29.9%	246598 (38570) 42.5%
25	2665 (528) 64.0%	269* (142) 25.4%	82* (74) 69.0%	3016 (609) 56.4%	78999* (23059) 56.8%	60022* (39091) 23.4%	69558* (62426) 56.6%	208580* (80795) 40.2%
26	1789* (752) 43.5%	449* (181) 28.6%	34* (70) 15.9%	2271* (726) 38.5%	48724* (19190) 35.4%	59129* (20470) 21.0%	22007* (45170) 10.6%	129860* (56942) 20.7%
27	14114 (1212) 77.9%	689* (177) 36.8%	102* (61) 32.4%	14905 (1179) 73.4%	336165 (30340) 70.3%	141902* (46533) 39.3%	100811* (49854) 29.2%	578878 (88177) 48.9%
28	2981 (536) 48.3%	456* (118) 39.3%	28* (28) 7.3%	3465 (561) 44.9%	83990 (12795) 46.5%	94305* (29211) 36.2%	34369* (25169) 7.2%	212663 (40702) 23.2%
29	846* (359) 83.6%	...	...	846* (359) 60.2%	30798* (13112) 75.2%	...	...	30798* (13112) 13.9%
30	3359 (829) 50.1%	599 (123) 39.0%	44* (43) 19.6%	4002 (830) 47.2%	105060 (19181) 46.7%	118280* (34800) 40.2%	25192* (24082) 10.8%	248532 (45798) 33.0%
31	611* (334) 65.6%	191* (81) 33.5%	...	802* (336) 52.6%	15421* (6912) 62.0%	48045* (21312) 35.5%	...	63466* (22293) 36.1%
32	4941 (995) 56.2%	286* (131) 28.3%	33* (30) 18.0%	5260 (1026) 52.6%	122230 (21372) 51.5%	54754* (28912) 26.2%	23982* (23567) 18.6%	200967 (37900) 34.9%
33	2597 (522) 62.8%	728* (198) 49.6%	97* (54) 28.9%	3423 (581) 57.6%	78943 (14935) 57.0%	129936* (34980) 41.8%	116557* (62055) 18.8%	325436* (86168) 30.4%



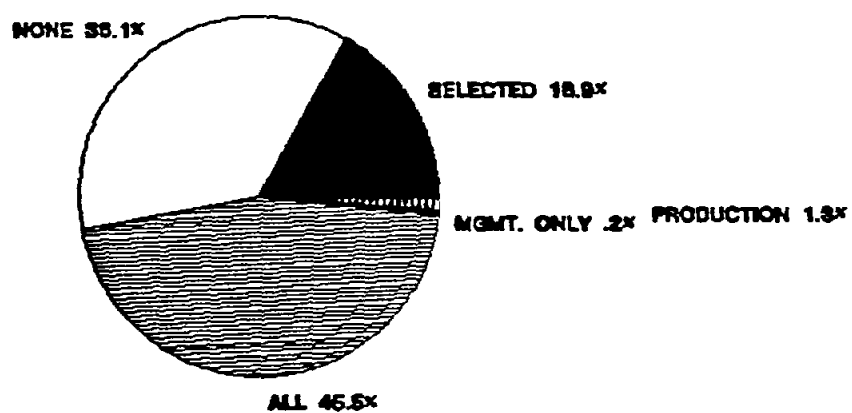
SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	11143 (1014) 60.2%	835 (198) 26.7%	98* (51) 28.4%	12076 (1057) 54.9%	296653 (24860) 53.5%	140672 (31540) 23.6%	75664* (40928) 21.6%	512989 (59087) 34.1%
35	14589 (1266) 64.4%	913 (168) 26.8%	138* (77) 17.6%	15640 (1316) 58.3%	342197 (22553) 56.4%	204080 (41643) 30.9%	129608* (73914) 11.6%	675885 (91311) 28.4%
36	3130 (493) 44.1%	1086 (187) 40.5%	174* (77) 22.1%	4391 (516) 41.5%	99286 (15250) 43.1%	195533 (33927) 35.4%	183437* (78004) 15.5%	478257 (86158) 24.3%
37	2143* (660) 53.9%	169* (76) 14.2%	51* (32) 12.2%	2363* (653) 42.4%	52952 (12771) 41.7%	25048* (13229) 10.5%	139231* (40586) 9.2%	217232 (43849) 11.6%
38	2002 (469) 74.5%	267* (102) 27.8%	61* (50) 14.8%	2330 (487) 57.4%	71161 (12565) 68.0%	49857* (22601) 25.6%	41339* (34703) 9.0%	162356 (34424) 21.4%
39	4492 (566) 68.5%	343* (667) 43.0%	10* (16) 3.0%	4845 (842) 63.0%	110448 (17359) 66.6%	50570* (94797) 33.8%	6000* (9493) 2.9%	167018* (96526) 31.8%
41	2084* (733) 47.2%	273* (146) 53.5%	...	2357* (793) 47.8%	37436* (15285) 31.8%	38327* (20191) 47.0%	...	75763* (29278) 38.0%
42	9307 (1571) 46.5%	277* (106) 18.7%	7* (17) 8.4%	9591 (1610) 44.4%	181462 (31347) 37.2%	58596* (32146) 22.6%	12595* (30665) 16.8%	252654 (56627) 30.8%
45	2318* (870) 71.5%	75* (75) 12.8%	61* (55) 41.7%	2454* (870) 61.7%	55523* (24157) 71.6%	7769* (7769) 7.1%	88838* (67114) 33.6%	152130* (70139) 33.7%
48	11141 (1800) 75.8%	223* (115) 24.7%	14* (12) 42.3%	11378 (1837) 72.8%	304541 (67466) 71.5%	41252* (21410) 23.4%	33054* (28615) 47.2%	378847 (84562) 56.4%
49	3151* (1077) 38.4%	863* (382) 46.3%	21* (16) 12.1%	4035* (1236) 39.4%	84071* (32709) 31.2%	223918* (122049) 52.6%	41485* (31333) 28.3%	349473* (131374) 41.5%
50	21475 (2276) 70.8%	455* (253) 25.3%	...	21931 (2292) 68.2%	410395 (61026) 65.1%	77656* (44442) 27.4%	...	488052 (79588) 53.4%
51	5041* (1296) 55.3%	...	...	5041* (1296) 53.9%	111622* (36605) 60.3%	...	...	111622* (36605) 52.6%
55	14584 (2609) 77.0%	620* (491) 99.9%	...	15203 (2720) 77.8%	231905 (41494) 75.0%	98575* (80174) 100.0%	...	330480* (96793) 81.1%
72	15459 (2399) 74.9%	422* (156) 62.6%	13* (19) 100.0%	15895 (2420) 74.6%	264303 (43092) 69.5%	48475* (18250) 59.0%	10670* (15114) 100.0%	323448 (53399) 68.4%
73	12834 (1595) 77.4%	608* (183) 40.8%	103* (60) 30.2%	13545 (1536) 73.6%	326386 (41475) 77.4%	145082* (44714) 41.5%	95341* (53359) 29.0%	566809 (73676) 51.5%
75	18013 (2654) 68.8%	59* (60) 99.7%	...	18072 (2665) 68.9%	261372 (38116) 63.2%	8238* (8380) 100.0%	...	269610 (39759) 64.0%
76	6497* (1737) 66.6%	...	...	6497* (1737) 65.8%	121385 (29013) 68.0%	...	...	121385 (29013) 59.9%
80	1131* (488) 39.8%	753 (174) 34.8%	240 (59) 11.7%	2125* (561) 30.1%	22934* (10382) 22.6%	179088 (38824) 33.5%	285963 (60970) 9.5%	487985 (73564) 13.3%
A11	297278 (8497) 66.5%	18120 (961) 36.6%	1869 (337) 19.8%	317267 (8967) 62.7%	6727497 (167590) 61.0%	3421447 (197546) 35.0%	1922302 (250273) 15.4%	12071246 (416735) 36.3%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE III - 105**  
**POST-ILLNESS EXAMINATIONS REQUIRED**  
**(NOES 1981-1983)**



**PLANTS**



**WORKERS**

**NOES QUESTIONNAIRE ITEM NO. 26**  
**Required Exit Medical Examinations**

**Intent**

The intent of this question was to determine if the facility required medical examinations upon termination of employment, and if specific employee groups were affected by this policy.

This item was displayed on the questionnaire as:

Do you require medical  
examinations of your  
employees when their  
employment is  
terminated? (Exit  
examination)

1

2

3

4

5

**Notes**

All examinations performed by or under the supervision of a physician which were required upon the termination of a worker's employment would be included as a positive response to this inquiry.

No voluntary examinations were accepted as a positive response.

**Analysis**

Three analyses of the responses to question 26 are presented.

- (1) Response 26.2, 26.4, or 26.5 - Exit examinations required for all, production or selected workers

The estimates of the plants which require exit examinations for all workers, production workers, or selected workers, and workers in those plants (by number and proportion of the totals) are displayed in Figures III-106 and III-107, and Tables III-89 and III-90.

Figure III-106	Exit exams required for all or selected workers (by major industrial group)
Figure III-107	Exit exams required for all or selected workers (by 2-digit SIC)
Table III-89	Number and percent of plants and employees in plants which require exit examinations for all or selected workers (by major industrial group)
Table III-90	Number and percent of plants and employees in plants which require exit examinations for all or selected workers (by 2-digit SIC)

- (2) Response 26.1 or 26.3 - Exit examinations not required, or required for management only

The estimates of the plants which either do not require exit examinations, or require them for management personnel only, and the workers in those plants (by number and proportion of the totals) are displayed in Figures III-108 and III-109, and Tables III-91 and III-92.

Figure III-108 Exit exams not required or for management only  
(by major industrial group)

Figure III-109 Exit exams not required or for management only  
(by 2-digit SIC)

Table III-91 Number and percent of plants and employees in plants which do not require exit exams or examine management only (by major industrial group)

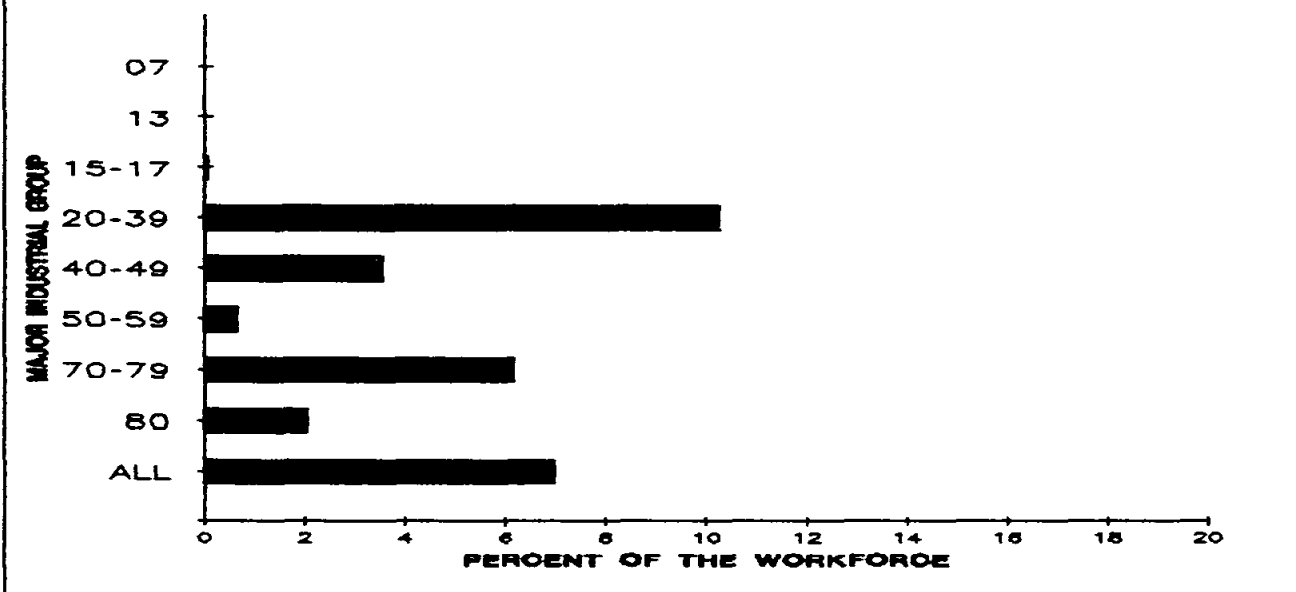
Table III-92 Number and percent of plants and employees in plants which do not require exit exams or examine management only (by 2-digit SIC)

- (3) Response 26.1, 26.2, 26.3, 26.4, or 26.5 - Required exit medical examinations

The estimated proportions of plants and workers in those plants corresponding to each of the five possible responses to the exit examination inquiry are displayed in Figure III-110.

Figure III-110 Exit or termination examinations required

**FIGURE III - 106**  
**EXIT EXAMS REQUIRED FOR ALL OR SELECTED WORKERS**  
**(NOES 1981-1983)**



NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-89

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 REQUIRE EXIT EXAMINATIONS FOR ALL OR SELECTED WORKERS

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...
15-17	...	16* (14) .4%	...	16* (14) .0%	...	3106* (2726) .4%	...	3106* (2726) .1%
20-39	651* (285) .4%	834 (178) 2.6%	982 (174) 15.7%	2466 (360) 1.3%	31062* (11786) .7%	204019 (43454) 3.2%	1744700 (188194) 21.1%	1979781 (185541) 10.3%
40-49	828* (577) 1.6%	174* (99) 3.0%	28* (17) 5.9%	1029* (594) 1.7%	17757* (10720) 1.2%	31394* (18218) 2.7%	65551* (40321) 11.4%	114702* (48503) 3.6%
50-59	326* (267) .6%	...	...	326* (267) .5%	11151* (10458) 1.0%	...	...	11151* (10458) .7%
70-79	341* (262) .5%	241* (79) 10.3%	95* (105) 26.7%	676* (270) .9%	12598* (9800) .9%	53974* (18879) 11.6%	70594* (75295) 20.8%	137167* (77670) 6.2%
80	...	61* (48) 2.8%	8* (10) .4%	70* (51) 1.0%	...	19762* (14890) 3.7%	58645* (75838) 1.9%	78407* (79264) 2.1%
ALL	2145* (744) .5%	1325 (224) 2.7%	1112 (204) 11.8%	4582 (793) .9%	72568* (21430) .7%	312255 (52969) 3.2%	1939490 (220144) 15.6%	2324313 (221833) 7.0%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
REQUIRE EXIT EXAMINATIONS FOR ALL OR SELECTED WORKERS

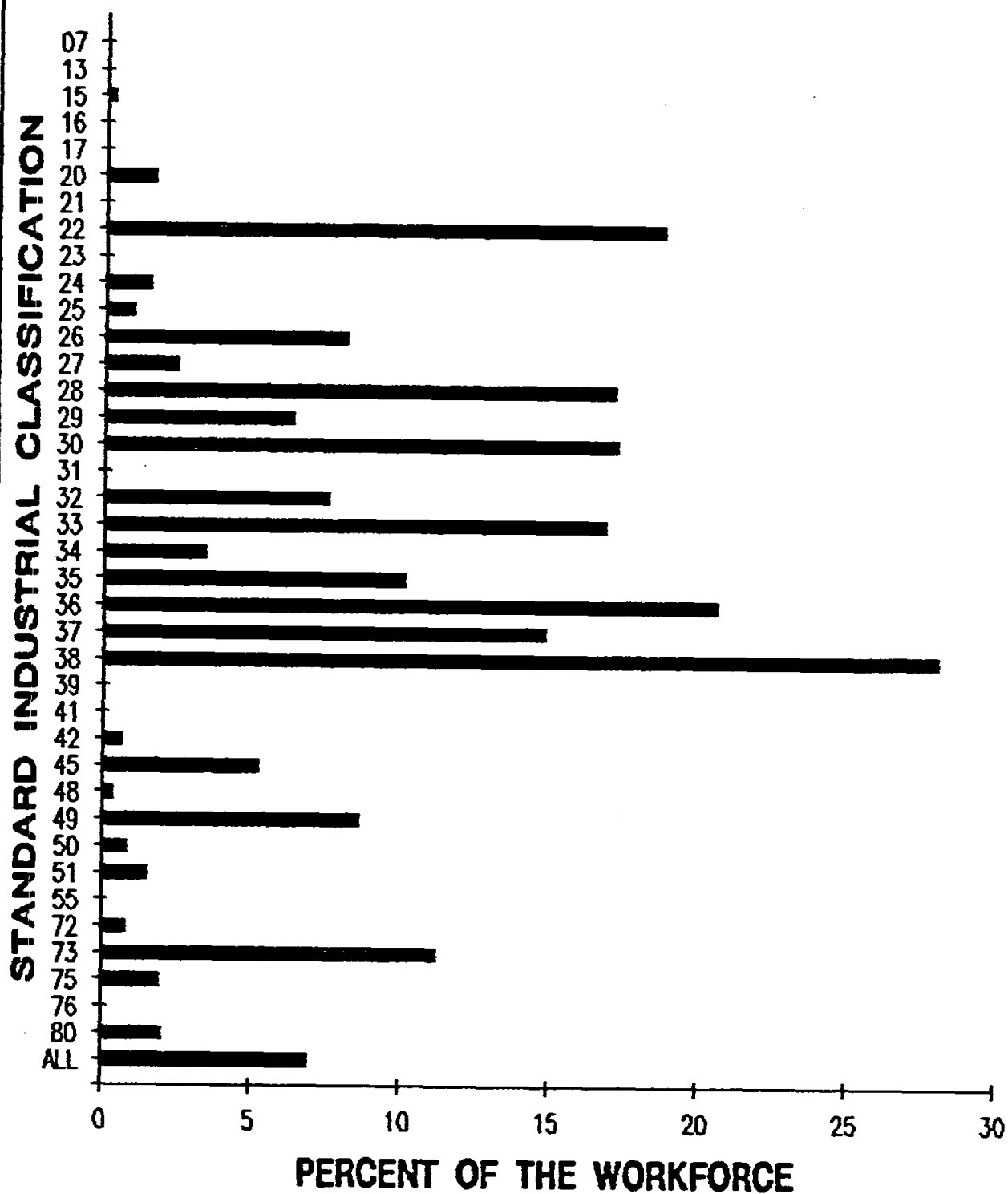
SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...
15	...	16* (14) 1.4%	...	16* (14) .1%	...	3106* (2726) 1.6%	...	3106* (2726) .3%
16	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...
20	149* (128) 1.3%	67* (65) 2.1%	...	216* (153) 1.4%	9576* (9816) 2.5%	16774* (16163) 2.5%	...	26349* (19779) 1.7%
21	...	...	...	...	...	...	...	...
22	...	196* (90) 12.3%	109* (71) 36.4%	304* (147) 6.3%	...	64739* (30568) 18.7%	69282* (46271) 26.5%	134022* (70685) 18.8%
23	...	...	...	...	...	...	...	...
24	...	66* (89) 5.7%	...	66* (89) .6%	...	9148* (12354) 5.0%	...	9148* (12354) 1.6%
25	...	15* (29) 1.4%	...	15* (29) .3%	...	4952* (9618) 1.9%	...	4952* (9618) 1.0%
26	89* (84) 2.2%	23* (26) 1.5%	11* (12) 5.3%	124* (90) 2.1%	8206* (7701) 6.0%	3077* (3427) 1.1%	40240* (42386) 19.5%	51522* (41613) 8.2%
27	...	...	27* (25) 8.5%	27* (25) .1%	...	...	29693* (19951) 8.6%	29693* (19951) 2.5%
28	78* (53) 1.3%	219* (59) 18.9%	83* (63) 21.8%	380* (112) 4.9%	5576* (3751) 3.1%	42386* (15768) 16.3%	109923* (74607) 23.1%	157884* (80071) 17.2%
29	...	...	7* (27) 6.9%	7* (27) .5%	...	...	14254* (55458) 12.1%	14254* (55458) 6.4%
30	...	...	106* (61) 47.5%	106* (61) 1.3%	...	...	130609* (67611) 55.9%	130609* (67611) 17.3%
31	...	...	...	...	...	...	...	...
32	38* (45) .4%	101* (81) 10.0%	30* (25) 16.1%	169* (100) 1.7%	3125* (3674) 1.3%	20380* (15710) 9.8%	20375* (17151) 15.8%	43880* (23439) 7.6%
33	...	54* (50) 3.7%	56* (18) 16.6%	110* (49) 1.9%	...	16990* (15341) 5.5%	164540* (52964) 26.5%	181531* (51379) 16.9%

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	296* (219) 1.6%	38* (27) 1.2%	63* (41) 18.1%	397* (229) 1.8%	4580* (3488) .8%	7231* (5918) 1.2%	41407* (26866) 11.8%	53218* (27659) 3.5%
35	...	52* (32) 1.5%	107* (46) 13.7%	160* (55) .6%	...	18125* (10507) 2.7%	225379* (69949) 20.3%	243504* (70568) 10.2%
36	...	...	125* (40) 15.9%	125* (40) 1.2%	...	...	406051* (133606) 34.3%	406051* (133606) 20.7%
37	...	...	63* (19) 15.1%	63* (19) 1.1%	...	...	279584 (63138) 18.5%	279584 (63138) 14.9%
38	...	2* (2) .2%	195* (99) 46.9%	197* (99) 4.8%	...	218* (241) .1%	213362* (120865) 46.3%	213580* (120875) 28.1%
39	...	...	...	...	...	...	...	...
41	...	...	...	...	...	...	...	...
42	152* (148) .8%	...	...	152* (148) .7%	5470* (5318) 1.1%	...	...	5470* (5318) .7%
45	...	...	7* (7) 4.7%	7* (7) .2%	...	...	24066* (25642) 9.1%	24066* (25642) 5.3%
48	77* (74) .5%	...	...	77* (74) .5%	2709* (2589) .6%	...	...	2709* (2589) .4%
49	...	174* (99) 9.3%	21* (16) 12.1%	194* (103) 1.9%	...	31394* (18218) 7.4%	41485* (31333) 28.3%	72879* (38917) 8.7%
50	104* (128) .3%	...	...	104* (128) .3%	7835* (9630) 1.2%	...	...	7835* (9630) .9%
51	221* (223) 2.4%	...	...	221* (223) 2.4%	3316* (3348) 1.8%	...	...	3316* (3348) 1.6%
55	...	...	...	...	...	...	...	...
72	...	39* (38) 5.8%	...	39* (38) .2%	...	4337* (4171) 5.3%	...	4337* (4171) .9%
73	114* (129) .7%	202* (87) 13.6%	95* (105) 27.7%	411* (184) 2.2%	4003* (4529) .9%	49637* (20336) 14.2%	70594* (75295) 21.5%	124235* (77275) 11.3%
75	226* (240) .9%	...	...	226* (240) .9%	8595* (9104) 2.1%	...	...	8595* (9104) 2.0%
76	...	...	...	...	...	...	...	...
80	...	61* (48) 2.8%	8* (10) .4%	70* (51) 1.0%	...	19762* (14890) 3.7%	58645* (75838) 1.9%	78407* (79264) 2.1%
All	1546* (488) .3%	1325 (223) 2.7%	1112 (185) 11.8%	3984 (516) .8%	62990* (19551) .6%	312255 (55442) 3.2%	1939490 (244740) 15.6%	2314735 (238946) 7.0%

\*Standard error &gt;25% of the estimate. The estimate may be unreliable.

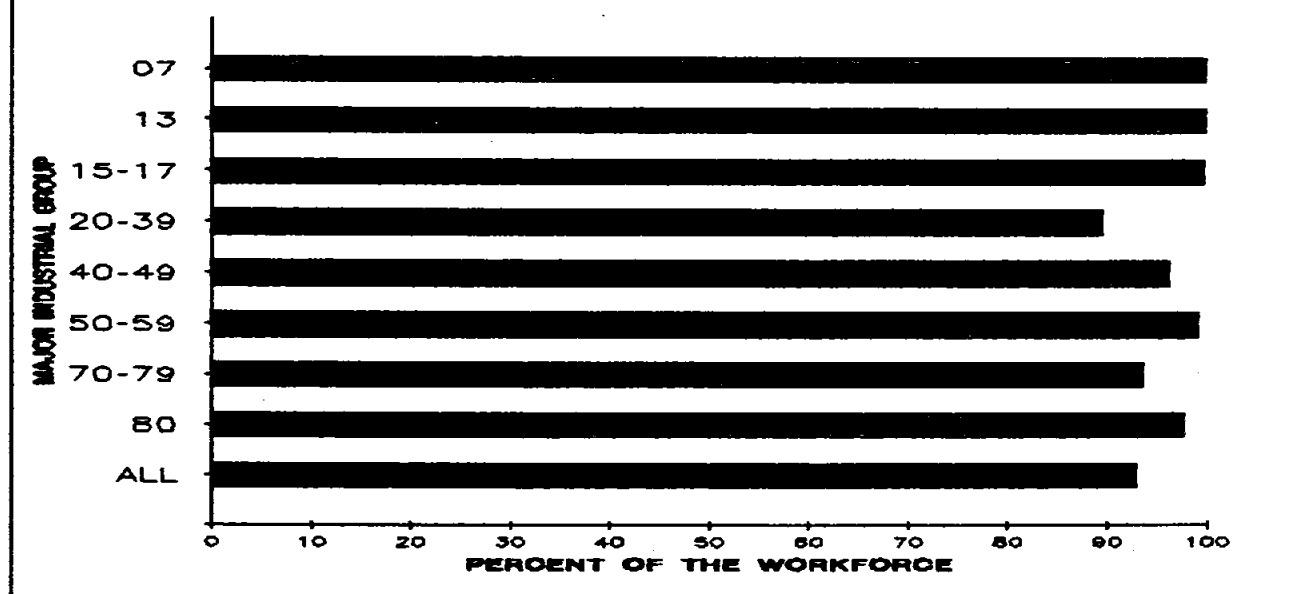
...No facilities observed.

**FIGURE III - 107**  
**EXIT EXAMS REQUIRED FOR ALL OR SELECTED WORKERS**  
**(NOES 1981-1983)**





**FIGURE III - 108**  
**EXIT EXAMS NOT REQUIRED OR FOR MANAGEMENT ONLY**  
**(NOES 1981-1983)**



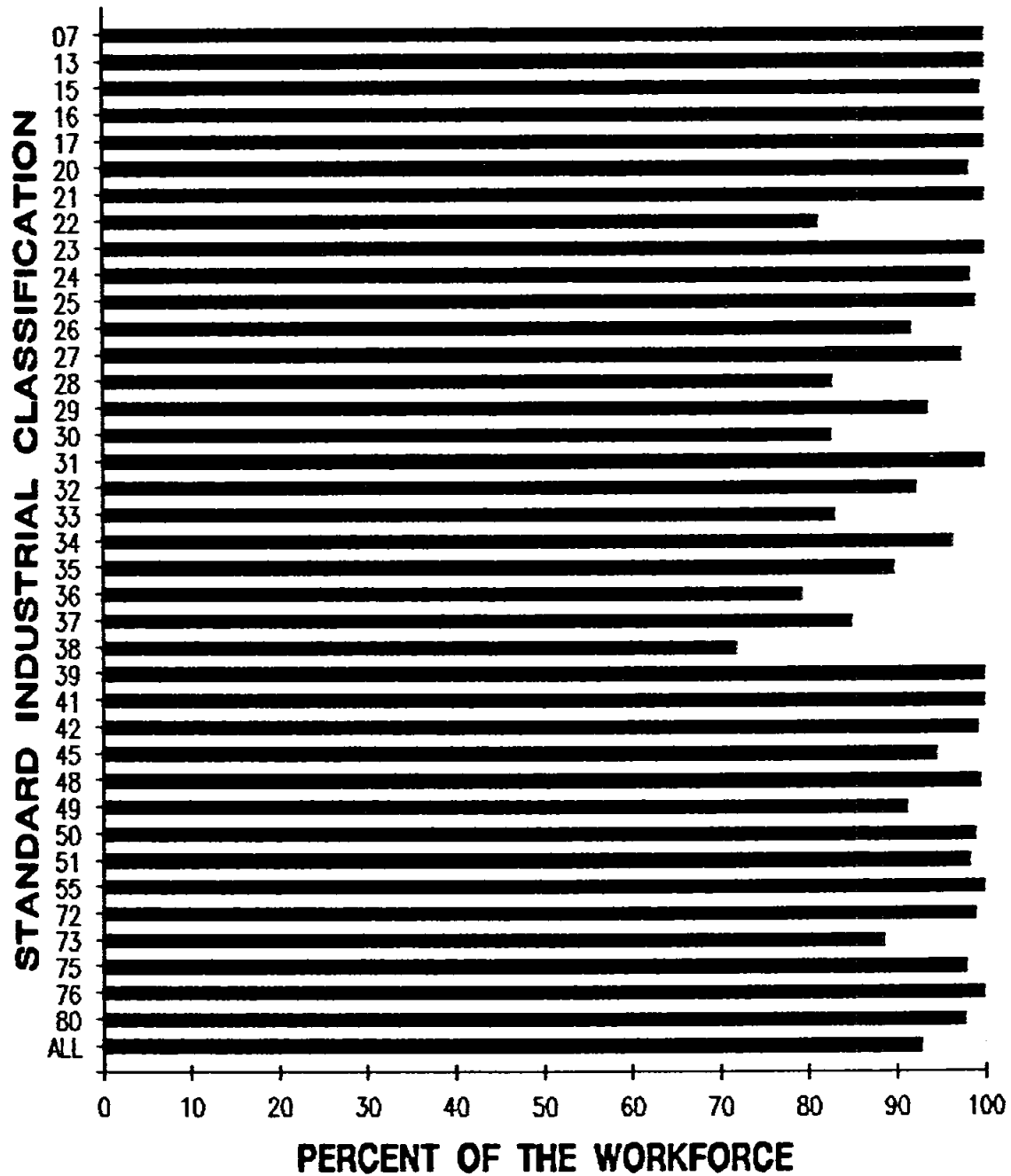
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-91

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
DO NOT REQUIRE EXIT EXAMINATIONS OR EXAMINE MANAGEMENT ONLY

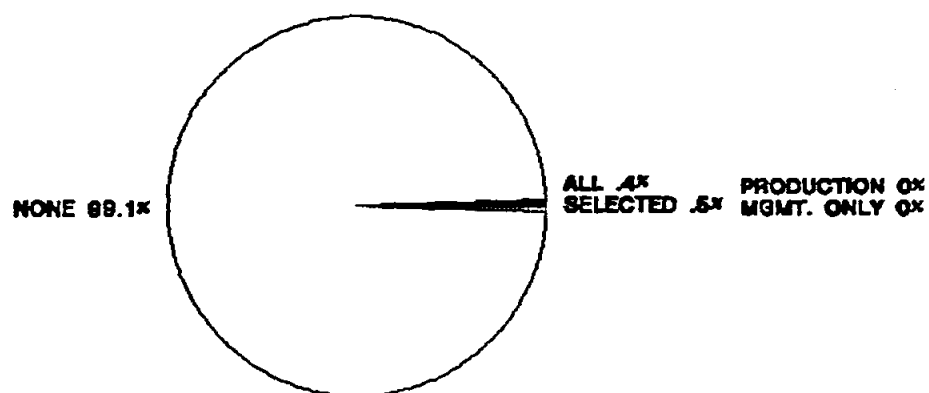
MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	5563* (1575) 100.0%	70* (67) 100.0%	...	5633* (1557) 100.0%	103682* (30828) 100.0%	7009* (6680) 100.0%	...	110692* (29333) 100.0%
13	8597 (1933) 100.0%	1019* (331) 100.0%	46* (52) 100.0%	9662 (2132) 100.0%	208958 (38479) 100.0%	173943* (58021) 100.0%	31383* (35291) 100.0%	414284 (101840) 100.0%
15-17	94332 (2397) 100.0%	4129 (542) 99.6%	242* (135) 100.0%	98704 (2408) 100.0%	2098893 (18337) 100.0%	733993 (105764) 99.6%	236057* (100060) 100.0%	3068943 (132308) 99.9%
20-39	152592 (2558) 99.6%	30920 (2002) 97.4%	5288 (204) 84.3%	188800 (3752) 98.7%	4584632 (42050) 99.3%	6176794 (377221) 96.8%	6520621 (334523) 78.9%	17282047 (640129) 89.7%
40-49	52324 (2896) 98.4%	5670 (993) 97.0%	440* (135) 94.1%	58435 (3451) 98.3%	1416112 (105180) 98.8%	1121920 (215300) 97.3%	508192 (109930) 88.6%	3046224 (271487) 96.4%
50-59	58066 (3774) 99.4%	2659* (726) 100.0%	...	60725 (3932) 99.5%	1113224 (81750) 99.0%	408827* (110771) 100.0%	...	1522050 (143644) 99.3%
70-79	72793 (3591) 99.5%	2105 (336) 89.7%	260* (101) 73.4%	75158 (3552) 99.1%	1380576 (65827) 99.1%	410538 (62712) 88.4%	268966* (97061) 79.2%	2060080 (110572) 93.8%
80	2839* (830) 100.0%	2105 (271) 97.2%	2053 (304) 99.6%	6997 (857) 99.0%	101644 (22701) 100.0%	514723 (72692) 96.3%	2964031 (356584) 98.1%	3580398 (351083) 97.9%
ALL	447108 (7398) 99.5%	48678 (2473) 97.3%	8330 (428) 88.2%	504115 (8220) 99.1%	11007722 (164711) 99.3%	9547747 (474061) 96.8%	10529250 (521364) 84.4%	31084718 (817512) 93.0%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

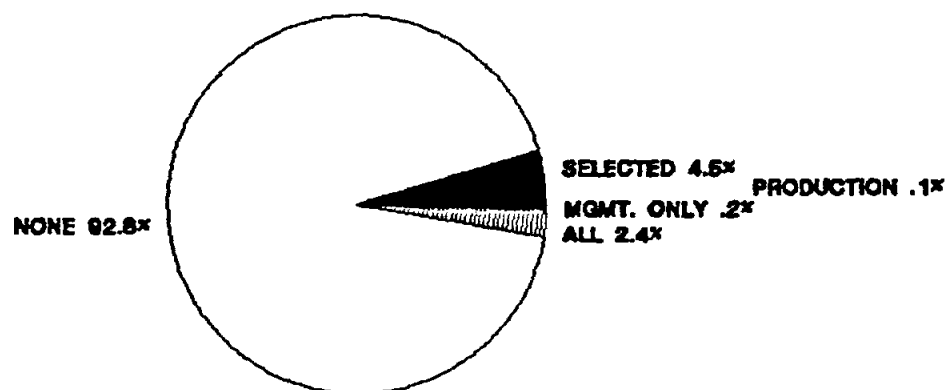
**FIGURE III - 109**  
**EXIT EXAMS NOT REQUIRED OR FOR MANAGEMENT ONLY**  
**(NOES 1981-1983)**



**FIGURE III - 110**  
**EXIT OR TERMINATION EXAMINATIONS REQUIRED**  
**(NOES 1981-1983)**



**PLANTS**



**WORKERS**

NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-92

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
DO NOT REQUIRE EXIT EXAMINATIONS OR EXAMINE MANAGEMENT ONLY

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	5563* (1575) 100.0%	70* (67) 100.0%	...	5633* (1557) 100.0%	103682* (30828) 100.0%	7009* (6680) 100.0%	...	110692* (29333) 100.0%
13	8597 (1933) 100.0%	1019* (331) 100.0%	46* (52) 100.0%	9662 (2132) 100.0%	208958 (38479) 100.0%	173943* (58021) 100.0%	31383* (35291) 100.0%	414284 (101840) 100.0%
15	24916 (1781) 100.0%	1092 (195) 98.6%	135* (100) 100.0%	26142 (1838) 99.9%	562888 (44936) 100.0%	195112 (37825) 98.4%	134799* (71218) 100.0%	892799 (91650) 99.7%
16	11284 (1432) 100.0%	1119 (194) 100.0%	107* (67) 100.0%	12511 (1426) 100.0%	284089 (46249) 100.0%	207759 (44051) 100.0%	101258* (53561) 100.0%	593106 (86065) 100.0%
17	58132 (1697) 100.0%	1919 (433) 100.0%	...	60051 (1740) 100.0%	1251915 (31289) 100.0%	331122* (83193) 100.0%	...	1583038 (85352) 100.0%
20	11263 (625) 98.7%	3148 (465) 97.9%	559 (121) 100.0%	14971 (774) 98.6%	378862 (10715) 97.5%	657007 (109570) 97.5%	491775 (104930) 100.0%	1527644 (110640) 98.3%
21	30* (43) 100.0%	...	79* (56) 99.6%	109* (65) 100.0%	1866* (2685) 100.0%	...	112133* (67572) 100.0%	113999* (66861) 100.0%
22	2932 (393) 100.0%	1393 (159) 87.7%	190* (86) 63.5%	4514 (371) 93.7%	106032 (5745) 100.0%	282334 (31481) 81.3%	191811* (102484) 73.5%	580177 (109042) 81.2%
23	12514 (828) 100.0%	3102 (163) 100.0%	242* (93) 100.0%	15858 (843) 100.0%	423904 (10003) 100.0%	609922 (29811) 100.0%	208437* (79559) 100.0%	1242263 (81210) 100.0%
24	10711 (682) 100.0%	1082 (136) 94.2%	104* (74) 100.0%	11897 (736) 99.5%	303646 (24224) 100.0%	174437 (24113) 95.0%	92355* (52501) 100.0%	570438 (78586) 98.4%
25	4164 (491) 100.0%	1047 (148) 98.6%	119* (75) 99.6%	5330 (496) 99.7%	139109 (19535) 100.0%	251491 (41227) 98.1%	122998* (62394) 100.0%	513598 (77096) 99.0%
26	4023 (786) 97.8%	1545 (230) 98.5%	203* (74) 94.8%	5772 (781) 97.9%	129448 (21410) 94.0%	278399 (47715) 98.9%	166625* (67320) 80.5%	574472 (91656) 91.8%
27	18118 (1009) 100.0%	1873 (163) 100.0%	290* (105) 91.7%	20280 (985) 99.9%	478131 (12884) 100.0%	360902 (46979) 100.0%	316058 (78136) 91.4%	1155091 (108592) 97.5%
28	6095 (423) 98.7%	942 (85) 81.2%	297* (100) 78.1%	7334 (377) 95.1%	175163 (5128) 96.9%	218445 (24443) 83.7%	366418* (123423) 76.9%	760026 (122411) 82.8%
29	1011* (404) 100.0%	293* (125) 100.0%	94* (40) 93.2%	1398* (460) 99.5%	40980* (17325) 100.0%	63255* (21394) 100.0%	103291* (47214) 87.9%	207526* (62996) 93.6%
30	6711 (1152) 100.0%	1537 (382) 100.0%	117* (47) 52.4%	8365 (1310) 98.7%	225004 (27639) 100.0%	294530* (81731) 100.0%	103038* (38356) 44.1%	622572 (108294) 82.7%
31	931* (343) 100.0%	569 (131) 100.0%	25* (24) 100.0%	1525 (372) 100.0%	24888* (7207) 100.0%	135459* (34334) 100.0%	15664* (16901) 100.0%	176011 (38675) 100.0%
32	8760 (1138) 99.6%	911 (156) 90.0%	154* (60) 83.8%	9825 (1183) 98.3%	234035 (14590) 98.7%	188604 (34643) 90.2%	108618* (41738) 84.2%	531257 (46275) 92.4%
33	4134 (468) 100.0%	1414 (137) 96.3%	281 (61) 83.4%	5829 (470) 98.2%	138468 (10157) 100.0%	294090 (31348) 94.5%	456959 (68707) 73.5%	889517 (75856) 83.1%

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	18224 (1089) 98.4%	3084 (145) 98.8%	283* (75) 81.8%	21590 (1068) 98.2%	550305 (9661) 99.2%	589453 (25066) 98.8%	309649* (102349) 88.2%	1449407 (111664) 96.5%
35	22650 (1097) 100.0%	3353 (141) 98.5%	677 (79) 86.3%	26680 (1124) 99.4%	606800 (8461) 100.0%	642995 (10504) 97.3%	887554 (111068) 79.7%	2137349 (113622) 89.8%
36	7104 (611) 100.0%	2685 (87) 100.0%	662 (151) 84.1%	10451 (599) 98.8%	230488 (11906) 100.0%	552662 (175) 100.0%	776411 (138629) 65.7%	1559561 (138597) 79.3%
37	3973 (835) 100.0%	1190 (102) 100.0%	353 (79) 84.9%	5516 (807) 98.9%	127022 (16795) 100.0%	239184 (28491) 100.0%	1234424 (279768) 81.5%	1600630 (273411) 85.1%
38	2689 (520) 100.0%	955 (86) 99.8%	221* (124) 53.1%	3865 (582) 95.2%	104602 (13774) 100.0%	194175 (19864) 99.9%	247035* (131412) 53.7%	545813* (138382) 71.9%
39	6553 (659) 100.0%	798* (1475) 100.0%	338* (216) 100.0%	7689 (1563) 100.0%	165877 (13792) 100.0%	149449* (273871) 100.0%	209369* (120490) 100.0%	524696* (259275) 100.0%
41	4420 (1016) 100.0%	510* (178) 100.0%	...	4930 (1084) 100.0%	117632 (25442) 100.0%	81542* (35755) 100.0%	...	199174 (49120) 100.0%
42	19875 (2226) 99.2%	1482 (319) 100.0%	82* (54) 99.5%	21439 (2315) 99.3%	482333 (54952) 98.9%	258822 (57060) 100.0%	74830* (49333) 100.0%	815985 (77574) 99.3%
45	3241* (911) 100.0%	590* (397) 99.9%	141* (55) 95.7%	3971* (1059) 99.8%	77497* (20033) 100.0%	109332* (75829) 100.0%	240189* (88357) 90.9%	427018* (109362) 94.7%
48	14624 (2098) 99.5%	902 (183) 100.0%	34* (21) 99.0%	15560 (2160) 99.5%	423049 (85998) 99.4%	176322 (39398) 100.0%	70083* (43687) 100.0%	669454 (110369) 99.6%
49	8215 (1754) 100.0%	1689* (545) 90.7%	152* (101) 87.7%	10056 (1971) 98.1%	269370 (58035) 100.0%	394076* (146859) 92.6%	105080* (65971) 71.7%	768525 (186923) 91.3%
50	30245 (2443) 99.7%	1802* (477) 100.0%	...	32047 (2499) 99.7%	622469 (67807) 98.8%	283239* (79024) 100.0%	...	905708 (116861) 99.1%
51	8893 (1212) 97.6%	237* (237) 100.0%	...	9130 (1259) 97.6%	181709 (40974) 98.2%	27013* (27013) 100.0%	...	208722* (55176) 98.4%
55	18928 (3032) 100.0%	620* (491) 99.9%	...	19548 (3239) 100.0%	309045 (54796) 100.0%	98575* (80174) 100.0%	...	407620* (110347) 100.0%
72	20629 (2414) 100.0%	636* (187) 94.2%	13* (19) 100.0%	21279 (2458) 99.8%	380020 (49376) 100.0%	77883* (23767) 94.7%	10670* (15114) 100.0%	468573 (61282) 99.1%
73	16460 (1695) 99.3%	1287 (228) 86.4%	246* (91) 72.3%	17993 (1660) 97.8%	417444 (44822) 99.1%	300076 (49248) 85.8%	258296* (90973) 78.5%	975815 (105120) 88.7%
75	25954 (3874) 99.1%	59* (60) 99.7%	...	26012 (3880) 99.1%	404681 (63093) 97.9%	8238* (8380) 100.0%	...	412919 (63628) 98.0%
76	9751 (2194) 100.0%	123* (94) 100.0%	...	9874 (2214) 100.0%	178432 (29757) 100.0%	24341* (19716) 100.0%	...	202773 (40475) 100.0%
80	2839* (830) 100.0%	2105 (271) 97.2%	2053 (304) 99.6%	6997 (857) 99.0%	101644 (22701) 100.0%	514723 (72692) 96.3%	2964031 (356584) 98.1%	3580398 (351083) 97.9%
All	445160 (6797) 99.7%	48227 (749) 97.3%	8313 (455) 88.2%	501700 (6797) 99.2%	10961490 (79683) 99.4%	9461526 (110201) 96.8%	10520245 (518349) 84.4%	30943261 (490394) 93.0%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

## NOES QUESTIONNAIRE ITEM NO. 27

### Retention of Medical Records

### Intent

The intent of this question was to determine the surveyed facility's management policy on the length of time that employee medical records are retained.

**This item was displayed on the questionnaire as:**

27. How long are medical records and other health information records retained?

Years (If "forever" code "999")  
(If "unknown" code "U K ")

## Notes

Record keeping systems (personnel or time keeping) were excluded from consideration unless they made specific provision for the inclusion of medical and/or health-related records.

Three classes of responses to question 27 were possible. In analyzing the survey data, it was decided that responses of unknown (UK) should be discarded since no real analytical process was possible. A "forever" (999) response did not allow for specificity, so analysis was performed to estimate the number of plants, and workers in those plants, where medical or health-related records were retained "forever". Approximately 43% of all plants, employing about 56% of the workforce in the survey sample frame, fall into this category.

The remaining respondents gave a specific ("non-forever") value which could be analyzed. These responses were averaged across the estimated populations of plants and workers.

### Analysis

**Two analyses of the responses to question 27 are presented.**

- (1) Response 27 - Average number of "non-forever" years that medical records are retained

Estimates of the average "non-forever" retention periods for medical or health-related records are displayed in Figures III-111 and III-112, and Tables III-93 and III-94.

**Figure III-111      Average number of "non-forever" years plants keep medical records**

(by major industrial group)

**Figure III-112**      **Average number of "non-forever" years plants keep medical records**

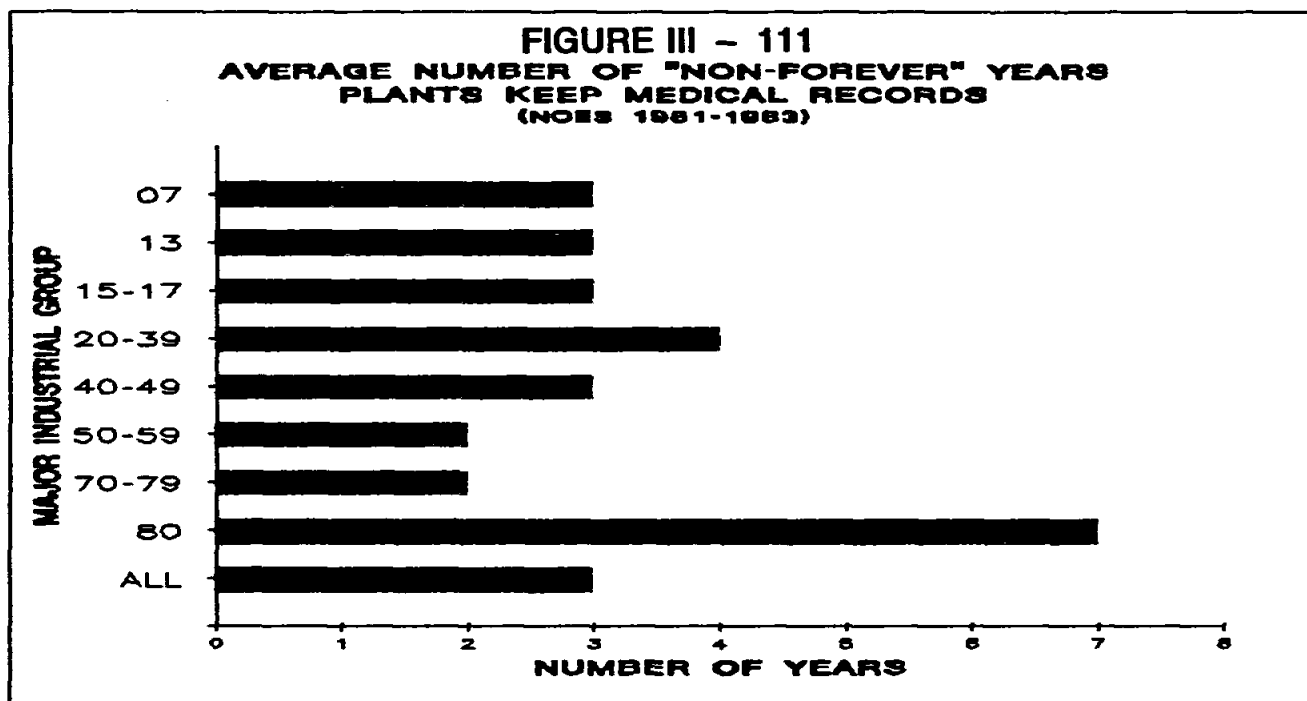
(by 2-digit SIC)

Table III-93	Average number of years facilities keep medical records among plants not reporting "forever" (by major industrial group)
Table III-94	Average number of years facilities keep medical records among plants not reporting "forever" (by 2-digit SIC)

(2) Response 27 - Number of plants retaining medical records "forever"

The estimates of the plants which keep medical or health-related records "forever", and workers in those plants (by number and proportion of the totals) are displayed in Figures III-113 and III-114, and Tables III-95 and III-96.

Figure III-113	Proportion of plants which keep medical records "forever" (by major industrial group)
Figure III-114	Proportion of plants which keep medical records "forever" (by 2-digit SIC)
Table III-95	Number and percent of plants and employees in plants which keep medical records "forever" (by major industrial group)
Table III-96	Number and percent of plants and employees in plants which keep medical records "forever" (by 2-digit SIC)



NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-93

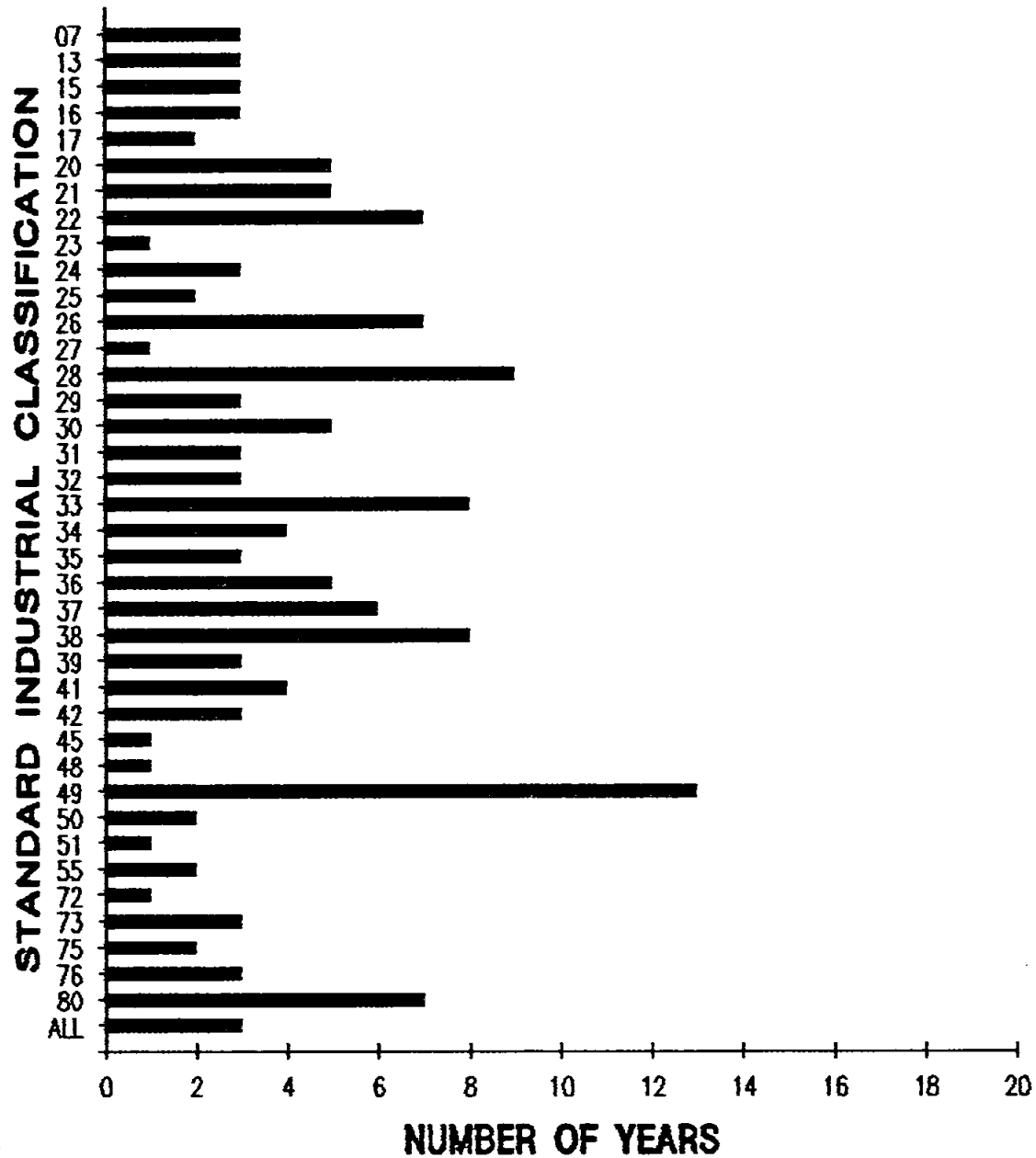
AVERAGE NUMBER OF YEARS FACILITIES KEEP MEDICAL RECORDS AMONG PLANTS NOT REPORTING "FOREVER"

MAJOR GROUP	PLANT SIZE			ALL
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	
07	3* (1)	3* (2)	...	3* (1)
13	3* (2)	2* (1)	...	3* (2)
15-17	3 ( $<.5$ )	4* (1)	13* (7)	3 ( $<.5$ )
20-39	3 ( $<.5$ )	7 (1)	18 (2)	4 ( $<.5$ )
40-49	3* (1)	6* (2)	18* (7)	3* (1)
50-59	2 ( $<.5$ )	4* (3)	...	2 ( $<.5$ )
70-79	2 ( $<.5$ )	4* (1)	10* (6)	2 ( $<.5$ )
80	3* (2)	9 (1)	12 (2)	7 (2)
ALL	3 ( $<.5$ )	6 (1)	16 (1)	3 ( $<.5$ )

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.



**FIGURE III - 112**  
**AVERAGE NUMBER OF "NON-FOREVER" YEARS**  
**PLANTS KEEP MEDICAL RECORDS**  
**(NOES 1991-1993)**



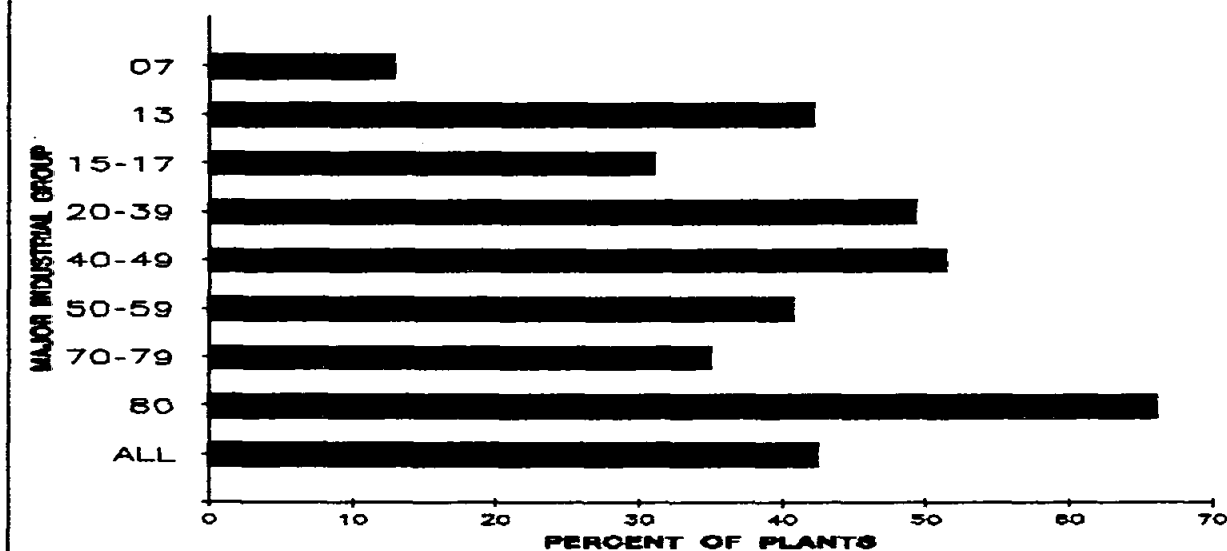
## AVERAGE NUMBER OF YEARS FACILITIES KEEP MEDICAL RECORDS AMONG PLANTS NOT REPORTING "FOREVER"

SIC CODE	PLANT SIZE			ALL
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	
07	3* (1)	3* (2)	---	3* (1)
13	3* (2)	2* (1)	---	3* (2)
15	3 (1)	4* (3)	4* (5)	3 (1)
16	2* (1)	8* (4)	21* (11)	3* (1)
17	2 ( $<.5$ )	3* (1)	---	2 ( $<.5$ )
20	4 (1)	10* (4)	16* (8)	5 (1)
21	---	---	5* (4)	5* (4)
22	3* (1)	9* (3)	28 (1)	7 (1)
23	1* (≥.25)	3 (1)	---	1* (≥.25)
24	2* (1)	8* (5)	30* (21)	3* (1)
25	1* (1)	5* (4)	6* (11)	2* (1)
26	6 (2)	5* (3)	16* (7)	7 (1)
27	1* (≥.25)	4 (1)	14* (6)	1* (≥.25)
28	7* (3)	17* (5)	42* (13)	9* (2)
29	---	19* (12)	30* (21)	3* (4)
30	4* (2)	9* (4)	26* (10)	5* (2)
31	2* (2)	5* (4)	---	3* (2)
32	2* (1)	10* (5)	30* (21)	3* (1)
33	8* (2)	6* (9)	22* (6)	8* (2)

SIC CODE	PLANT SIZE			ALL
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	
34	4 (1)	6* (2)	15* (8)	4 (1)
35	2 (1)	5* (1)	19 (4)	3 (1)
36	3* (1)	10* (4)	15 (3)	5 (1)
37	6* (3)	7* (5)	27 (5)	6* (3)
38	5* (2)	10* (4)	26* (12)	8* (2)
39	2* (1)	4* (3)	8* (9)	3* (1)
41	4* (3)	7 (1)	...	4* (2)
42	3* (1)	11 (2)	2* (6)	3 (1)
45	<1	1* (1)	18* (11)	1* (2)
48	1 ( $<.25$ )	3* (4)	30* (22)	1 ( $<.25$ )
49	16* (10)	4* (3)	20* (13)	13* (8)
50	2 ( $<.5$ )	4* (3)	...	2 ( $<.5$ )
51	1* ( $\geq .25$ )	7* (7)	...	1* (1)
55	2* (1)	1* (4)	...	2* (1)
72	1* ( $\geq .25$ )	1* (1)	7* (5)	1* ( $\geq .25$ )
73	3* (1)	7 (1)	10* (7)	3* (1)
75	2 (1)	...	...	2 (1)
76	3* (1)	7* (5)	...	3* (1)
80	3* (2)	9 (1)	12 (2)	7 (2)
ALL	3 ( $<.5$ )	6 (1)	16 (1)	3 ( $<.5$ )

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE III - 113**  
**PROPORTION OF PLANTS WHICH KEEP**  
**MEDICAL RECORDS "FOREVER"**  
 (NOES 1981-1988)



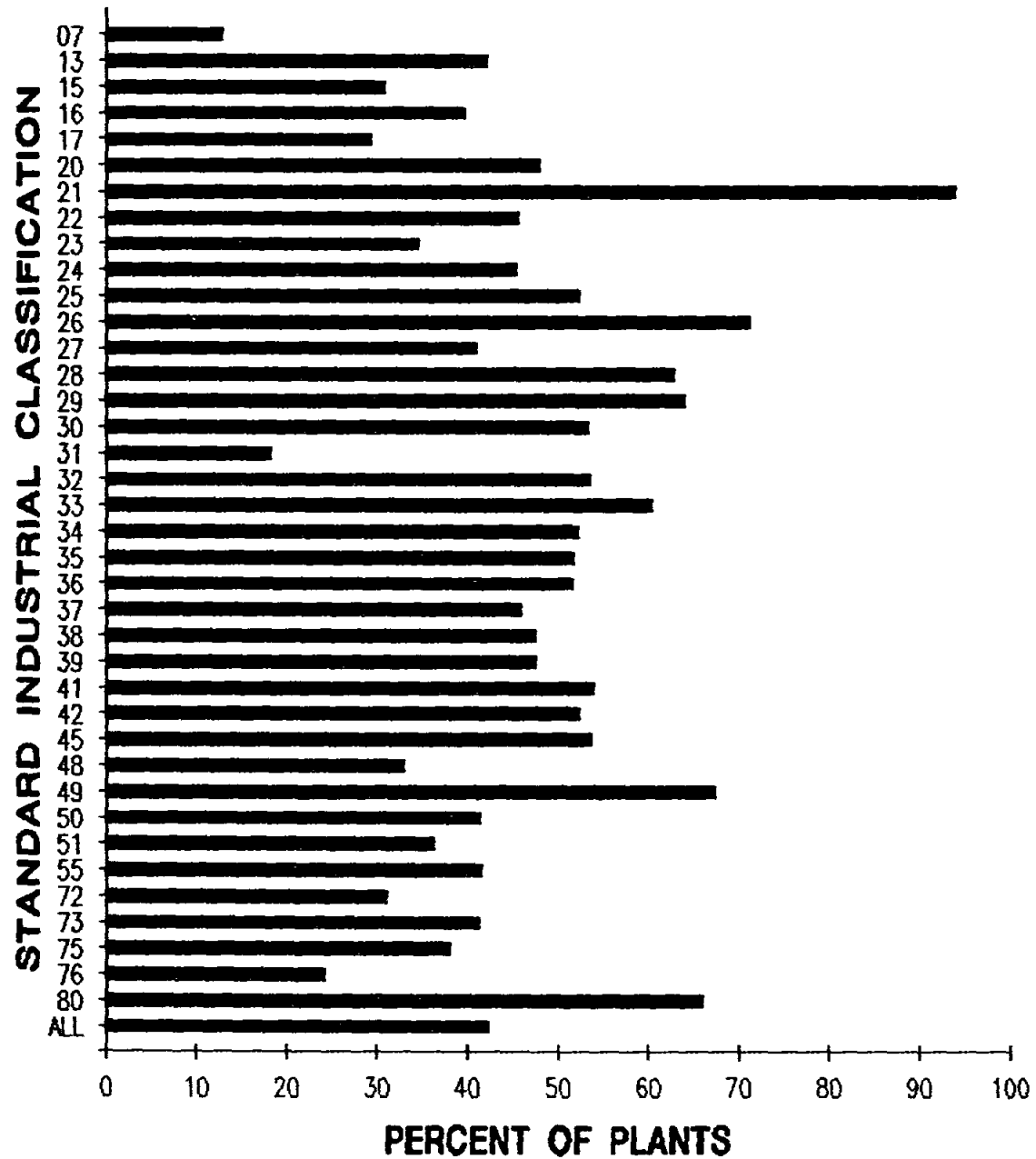
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. III-95

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 KEEP MEDICAL RECORDS "FOREVER"

MAJOR GROUP	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	740* (424) 13.3%	...	...	740* (424) 13.1%	16412* (13699) 15.8%	...	...	16412* (13699) 14.8%
13	3543* (1109) 41.2%	504* (265) 49.4%	46* (52) 100.0%	4093* (1334) 42.4%	85337 (21195) 40.8%	82541* (32461) 47.5%	31383* (35291) 100.0%	199260* (78172) 48.1%
15-17	29063 (3202) 30.8%	1557 (328) 37.6%	160* (123) 66.1%	30780 (3172) 31.2%	655681 (66758) 31.2%	289054 (58158) 39.2%	122941* (88482) 52.1%	1067677 (121817) 34.8%
20-39	71187 (3723) 46.5%	19254 (1503) 60.6%	4167 (207) 66.5%	94607 (4154) 49.5%	2258052 (87194) 48.9%	3986170 (307890) 62.5%	5380325 (354220) 65.1%	11624547 (592448) 60.4%
40-49	26525 (2698) 49.9%	3913 (783) 67.0%	272* (108) 58.1%	30710 (2939) 51.6%	811323 (91265) 56.6%	696735 (144422) 60.4%	352631* (106109) 61.5%	1860690 (202986) 58.9%
50-59	23830 (2174) 40.8%	1128* (394) 42.4%	...	24958 (2187) 40.9%	519679 (43520) 46.2%	189824* (72435) 46.4%	...	709504 (84495) 46.3%
70-79	25480 (2789) 34.8%	1017 (146) 43.3%	210* (124) 59.3%	26706 (2752) 35.2%	504203 (63312) 36.2%	223468 (34333) 48.1%	188543* (94781) 55.5%	916214 (110525) 41.7%
80	1841* (648) 64.9%	1561 (270) 72.1%	1283 (252) 62.3%	4686 (658) 66.3%	61119 (15240) 60.1%	387855 (74389) 72.6%	1805934 (341875) 59.7%	2254907 (330972) 61.6%
ALL	182208 (6762) 40.6%	28934 (1816) 57.9%	6138 (388) 65.0%	217280 (7121) 42.7%	4911807 (164804) 44.3%	5855648 (363386) 59.4%	7881756 (521217) 63.2%	18649211 (736365) 55.8%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE III - 114**  
**PROPORTION OF PLANTS WHICH**  
**KEEP MEDICAL RECORDS "FOREVER"**  
**(NOES 1981-1983)**



NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
KEEP MEDICAL RECORDS "FOREVER"

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	740* (424) 13.3%	...	...	740* (424) 13.1%	16412* (13699) 15.8%	...	...	16412* (13699) 14.8%
13	3543* (1109) 41.2%	504* (265) 49.4%	46* (52) 100.0%	4093* (1334) 42.4%	85337 (21195) 40.8%	82541* (32461) 47.5%	31383* (35291) 100.0%	199260* (78172) 48.1%
15	7424 (1063) 29.8%	555* (221) 50.1%	98* (99) 72.6%	8077 (1140) 30.9%	150101 (21601) 26.7%	107417* (38072) 54.2%	70472* (67228) 52.3%	327991 (80954) 36.6%
16	4254* (1408) 37.7%	660* (216) 59.0%	62* (50) 57.8%	4916* (1440) 39.8%	119757* (40324) 42.2%	120974* (44951) 58.2%	52469* (41334) 51.8%	293201* (81844) 49.4%
17	17384 (2480) 29.9%	342* (185) 17.8%	...	17726 (2502) 29.5%	385822 (45427) 30.8%	60663* (32414) 18.3%	...	446486 (54316) 28.2%
20	4852 (632) 42.5%	2001 (371) 62.2%	475 (104) 84.9%	7328 (749) 48.2%	180748 (25499) 46.5%	459768 (91441) 68.2%	418913 (95085) 85.2%	1059428 (107993) 68.2%
21	30* (43) 100.0%	...	72* (47) 91.5%	103* (59) 94.1%	1866* (2685) 100.0%	...	108745* (64516) 97.0%	110611* (63812) 97.0%
22	1067 (266) 36.4%	1022 (143) 64.4%	116* (45) 39.0%	2205 (303) 45.8%	46422 (10203) 43.8%	238358 (30970) 68.7%	92229* (44624) 35.3%	377009 (49607) 52.8%
23	3672 (545) 29.3%	1636 (230) 52.7%	196* (82) 80.9%	5505 (659) 34.7%	146717 (19925) 34.6%	333781 (45014) 54.7%	177749* (72914) 85.3%	658247 (80837) 53.0%
24	4690 (782) 43.8%	664* (183) 57.8%	97* (73) 93.5%	5451 (810) 45.6%	131040 (23804) 43.2%	105585* (27866) 57.5%	84209* (52011) 91.2%	320833 (63494) 55.4%
25	1974 (466) 47.4%	807* (219) 76.0%	30* (31) 25.2%	2812 (552) 52.6%	59929 (11629) 43.1%	195251* (53641) 76.1%	50849* (32821) 41.3%	306030 (73269) 59.0%
26	2890 (686) 70.3%	1203* (316) 76.7%	117* (66) 54.5%	4209 (728) 71.4%	85281 (20795) 62.0%	216766* (54854) 77.0%	84263* (51216) 40.7%	386311 (87409) 61.7%
27	6893 (1146) 38.0%	1253 (143) 66.9%	199* (95) 63.1%	8346 (1143) 41.1%	204606 (32320) 42.8%	220191 (39817) 61.0%	197464* (73483) 57.1%	622261 (96300) 52.5%
28	3811 (510) 61.7%	748 (143) 64.5%	305 (58) 80.2%	4864 (520) 63.1%	115831 (10218) 64.1%	179534 (40994) 68.8%	333092* (102949) 69.9%	628457 (109518) 68.5%
29	584* (289) 57.8%	238* (120) 81.1%	80* (38) 79.1%	902* (351) 64.2%	34715* (17013) 84.7%	55462* (19608) 87.7%	102156* (69145) 86.9%	192333* (80572) 86.7%
30	3566* (994) 53.1%	797* (344) 51.8%	174* (74) 77.6%	4536* (1210) 53.5%	118661 (24627) 52.7%	142562* (65374) 48.4%	164469* (71185) 70.4%	425691* (115134) 56.5%
31	47* (45) 5.0%	208* (82) 36.6%	25* (24) 100.0%	281* (96) 18.4%	1691* (1621) 6.8%	50862* (20805) 37.5%	15664* (16901) 100.0%	68217* (25622) 38.8%
32	4440 (836) 50.5%	771 (134) 76.2%	154* (60) 83.8%	5365 (851) 53.7%	139923 (17019) 59.0%	164779 (29274) 78.8%	108618* (41738) 84.2%	413321 (42966) 71.9%
33	2371 (548) 57.4%	956 (229) 65.1%	269 (57) 79.9%	3596 (634) 60.6%	73195 (14760) 52.9%	222485 (36775) 71.5%	354050 (73083) 57.0%	649730 (74767) 60.7%

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	9442 (1031) 51.0%	1862 (197) 59.6%	226* (82) 65.3%	11530 (1083) 52.4%	295943 (18436) 53.3%	373517 (43960) 62.6%	243628* (91224) 69.4%	913088 (106140) 60.8%
35	11282 (1277) 49.8%	2062 (214) 60.6%	575 (91) 73.4%	13919 (1200) 51.9%	344257 (24137) 56.7%	418922 (48633) 63.4%	742436 (89877) 66.7%	1505615 (89352) 63.2%
36	3536 (657) 49.8%	1389 (200) 51.7%	551* (148) 70.0%	5477 (698) 51.8%	101445 (21499) 44.0%	291460 (51239) 52.7%	770042 (137630) 65.1%	1162947 (155683) 59.2%
37	1574* (475) 39.6%	677 (141) 56.9%	318* (91) 76.5%	2570 (480) 46.1%	45987* (11535) 36.2%	127236* (40147) 53.2%	1096749 (221917) 72.4%	1269972 (219771) 67.5%
38	1143* (406) 42.5%	618 (112) 64.6%	177* (92) 42.5%	1938 (422) 47.7%	48622 (12114) 46.5%	106567 (26071) 54.8%	215534* (116457) 46.8%	370723* (125233) 48.8%
39	3321 (712) 50.7%	340* (658) 42.5%	10* (10) 3.0%	3671 (907) 47.7%	81173 (15332) 48.9%	83085* (162942) 55.6%	19466* (18968) 9.3%	183723* (158113) 35.0%
41	2434 (553) 55.1%	231* (132) 45.4%	---	2666 (573) 54.1%	63424 (15601) 53.9%	32864* (18259) 40.3%	---	96288 (23444) 48.3%
42	10351 (1755) 51.7%	972* (263) 65.6%	42* (30) 51.0%	11364 (1792) 52.6%	260835 (36128) 53.5%	164877* (46445) 63.7%	41982* (28109) 56.1%	467695 (68797) 56.9%
45	1651* (610) 50.9%	416* (326) 70.5%	79* (37) 53.6%	2146* (665) 53.9%	42124* (17174) 54.4%	53756* (43152) 49.2%	164040* (67312) 62.1%	259920* (65605) 57.6%
48	4474* (1327) 30.4%	684 (135) 75.8%	30* (20) 88.9%	5188* (1351) 33.2%	185880* (68591) 43.7%	138207* (35282) 78.4%	56857* (37465) 81.1%	380944 (87747) 56.7%
49	5597* (1441) 68.1%	1208* (421) 64.9%	121* (90) 69.9%	6926 (1567) 67.6%	217399 (52849) 80.7%	237647* (80983) 55.9%	89752* (62115) 61.2%	544798 (117381) 64.7%
50	12235 (1515) 40.3%	1128* (394) 62.6%	---	13363 (1675) 41.6%	285487 (29329) 45.3%	189824* (72435) 67.0%	---	475312 (88585) 52.0%
51	3417 (798) 37.5%	---	---	3417 (798) 36.5%	75734* (21891) 40.9%	---	---	75734* (21891) 35.7%
55	8179 (1527) 43.2%	---	---	8179 (1527) 41.8%	158458 (36736) 51.3%	---	---	158458 (36736) 38.9%
72	6536 (1599) 31.7%	115* (69) 17.1%	---	6652 (1598) 31.2%	135160 (27841) 35.6%	18109* (13497) 22.0%	---	153269 (30976) 32.4%
73	6613 (1511) 39.9%	806 (124) 54.1%	210* (124) 61.6%	7629 (1545) 41.5%	148973* (47326) 35.3%	184448 (28658) 52.7%	188543* (94781) 57.3%	521964 (106359) 47.4%
75	9953 (2031) 38.0%	59* (60) 99.7%	---	10012 (2027) 38.2%	171884 (37519) 41.6%	8238* (8380) 100.0%	---	180122 (37036) 42.7%
76	2377 (579) 24.4%	36* (45) 29.4%	---	2414 (589) 24.4%	48187 (11629) 27.0%	12672* (15755) 52.1%	---	60859* (20878) 30.0%
80	1841* (648) 64.9%	1561 (270) 72.1%	1283 (252) 62.3%	4686 (658) 66.3%	61119 (15240) 60.1%	387855 (74389) 72.6%	1805934 (341875) 59.7%	2254907 (330972) 61.6%
ALL	180190 (7552) 40.3%	28559 (1486) 57.6%	6138 (412) 65.1%	214886 (7730) 42.5%	4870145 (185032) 44.2%	5795354 (287085) 59.3%	7881756 (534658) 63.3%	18547255 (751986) 55.8%

\*Standard error &gt;25% of the estimate. The estimate may be unreliable.

...No facilities observed.





**NATIONAL OCCUPATIONAL EXPOSURE SURVEY  
(1981-1983)  
Analyses of Management Interview Responses**

**Section IV - Industrial Hygiene and Safety Practices**

- |                                      |   |
|--------------------------------------|---|
| - employed health/safety personnel   | - personal protective equipment required      |
| - number of health/safety personnel  | - provision of personal protective gear       |
| - industrial hygiene consultation    | - servicing of personal protective gear       |
| - occupational safety consultation   | - enforcement of personal protective gear use |
| - physical agent monitoring          | - economic penalties used                     |
| - physical agent records             | - economic penalties assessed                 |
| - fume, gas monitoring               | - safety inspections                          |
| - direct reading instruments used    | - written safety reports                      |
| - fume monitoring records            | - safety inspections reported to workers      |
| - chemical substitution              | - preventive maintenance                      |
| - substitution to reduce exposure    | - safety training                             |
| - substitution due to inspection     | - safety rule assessment                      |
| - equipment or process modifications | - safety rule enforcement                     |
| - modifications to reduce exposure   | - economic penalties used                     |
| - modifications due to inspection    | - economic penalties assessed                 |
| - nature of modifications            | - recirculation of exhaust air                |



**NOES QUESTIONNAIRE ITEM NO. 28**  
**Employment of Occupational Safety or Occupational Health Personnel**

**Intent**

The intent of this question was to determine if the facility employed individuals whose primary responsibilities were to prevent injuries and illnesses.

This item was displayed on the questionnaire as:

28. Do you employ full-time individuals at this facility whose major responsibilities are in the area of prevention of occupational injuries or illnesses?
- 1 Yes, injury prevention
  - 2 Yes, illness prevention
  - 3 Yes, both injuries and illnesses
  - 4 No (Skip to Question 30).

**Notes**

Injury prevention is the recognition, evaluation and control of occupational safety hazards. Injury prevention activities include, but are not limited to: inspection for fire hazards; inspection for safety guards on machinery; conduct of safety and first aid training; and evaluation of the environment for compliance with OSHA regulations.

Illness prevention is the recognition, evaluation and control of occupational health hazards. Illness prevention activities include, but are not limited to: the evaluation of occupational stress and the potential for impairment of worker health; prescribing methods for the necessary control or elimination of such stress based on experience and quantitative measurements; the collection of gases, or other forms of potentially toxic agents for analysis; and development of educational programs for employees.

Injury or illness prevention personnel were counted on the survey only if the individual(s) spent more than 50% of their time on such duties.

Injury or illness prevention activities performed by government or visiting corporate headquarters personnel were excluded. Personnel involved in direct delivery of medical care (doctors, nurses, etc.) who spent less than 50% of their time in injury or illness prevention programs were excluded.

**Analysis**

Three analyses of the responses to question 28 are presented.

**(1) Response 28.1 - Injury prevention personnel employed**

The estimates of the plants which employ full-time individuals whose major responsibilities are the prevention of occupational injuries,

and workers in those plants (by number and proportion of the total) are displayed in Figures IV-1 and IV-2, and Tables IV-1 and IV-2.

Figure IV-1	Occupational safety personnel employed on-site (by major industrial group)
Figure IV-2	Occupational safety personnel employed on-site (by 2-digit SIC)
Table IV-1	Number and percent of plants and employees in plants which employ occupational safety personnel (by major industrial group)
Table IV-2	Number and percent of plants and employees in plants which employ occupational safety personnel (by 2-digit SIC)

(2) Response 28.2 - Illness prevention personnel employed

The estimates of the plants which employ full-time individuals whose major responsibilities are the prevention of occupational illness, and workers in those plants (by number and proportion of the total) are displayed in Figures IV-3 and IV-4, and Tables IV-3 and IV-4.

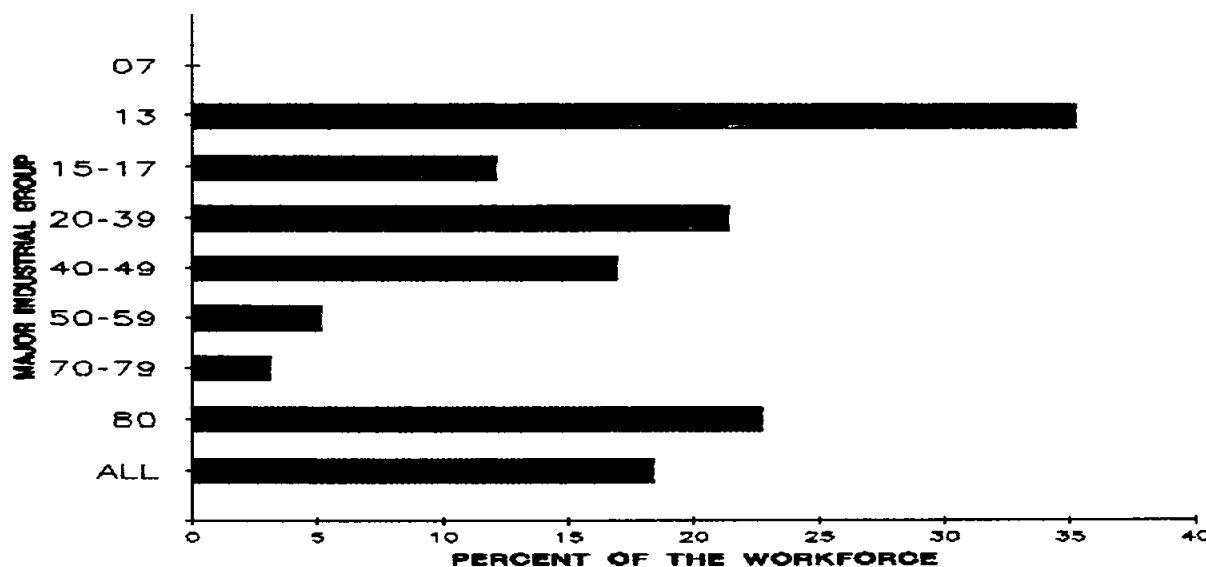
Figure IV-3	Occupational health personnel employed on-site (by major industrial group)
Figure IV-4	Occupational health personnel employed on-site (by 2-digit SIC)
Table IV-3	Number and percent of plants and employees in plants which employ occupational health personnel (by major industrial group)
Table IV-4	Number and percent of plants and employees in plants which employ occupational health personnel (by 2-digit SIC)

(3) Response 28.1, 28.2, or 28.3 - Injury and/or illness prevention personnel employed

The estimates of the plants which employ full-time individuals whose major duties are the prevention of either occupational injury or illness, and workers in those plants (by number and proportion of the total) are displayed in Figures IV-5, IV-6, and IV-7, and Tables IV-5 and IV-6.

Figure IV-5	Occupational health and/or safety personnel on-site (by major industrial group)
Figure IV-6	Occupational health and/or safety personnel on-site (by 2-digit SIC)
Figure IV-7	Plants with health or safety personnel
Table IV-5	Number and percent of plants and employees in plants which employ occupational safety and/or health personnel (by major industrial group)
Table IV-6	Number and percent of plants and employees in plants which employ occupational safety and/or health personnel (by 2-digit SIC)

**FIGURE IV - 1**  
**OCCUPATIONAL SAFETY PERSONNEL EMPLOYED ON-SITE**  
**(NOES 1981-1983)**



NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-1

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
EMPLOY OCCUPATIONAL SAFETY PERSONNEL

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	...	...	...	...	...	...	...	...
13	301* (180) 3.5%	531* (215) 52.1%	46* (52) 100.0%	878* (227) 9.1%	11591* (6543) 5.5%	103330* (42338) 59.4%	31383* (35291) 100.0%	146304* (55090) 35.3%
15-17	2688 (571) 2.8%	586* (191) 14.1%	179* (109) 74.1%	3454 (677) 3.5%	101517* (26239) 4.8%	109874* (30597) 14.9%	163439* (79915) 69.2%	374829 (86295) 12.2%
20-39	3255 (771) 2.1%	5130 (580) 16.2%	2389 (262) 38.1%	10774 (1065) 5.6%	187186 (41459) 4.1%	1150641 (131549) 18.0%	2802198 (334041) 33.9%	4140025 (370504) 21.5%
40-49	635* (323) 1.2%	1219* (359) 20.9%	150* (48) 32.0%	2003* (537) 3.4%	42652* (24678) 3.0%	280722* (92751) 24.3%	215519* (80670) 37.6%	538893* (139453) 17.0%
50-59	694* (412) 1.2%	298* (195) 11.2%	...	992* (369) 1.6%	21548* (11460) 1.9%	58294* (46664) 14.3%	...	79842* (45253) 5.2%
70-79	403* (174) .6%	84* (35) 3.6%	24* (21) 6.9%	512* (176) .7%	17581* (7895) 1.3%	28462* (10064) 6.1%	24567* (17710) 7.2%	70610* (21692) 3.2%
80	...	239* (114) 11.0%	423* (114) 20.5%	662* (167) 9.4%	...	69338* (27350) 13.0%	765049 (170644) 25.3%	834386 (179500) 22.8%
ALL	7977 (1121) 1.8%	8087 (775) 16.2%	3212 (314) 34.0%	19275 (1459) 3.8%	382075 (57033) 3.4%	1800661 (177942) 18.3%	4002154 (393899) 32.1%	6184890 (449378) 18.5%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

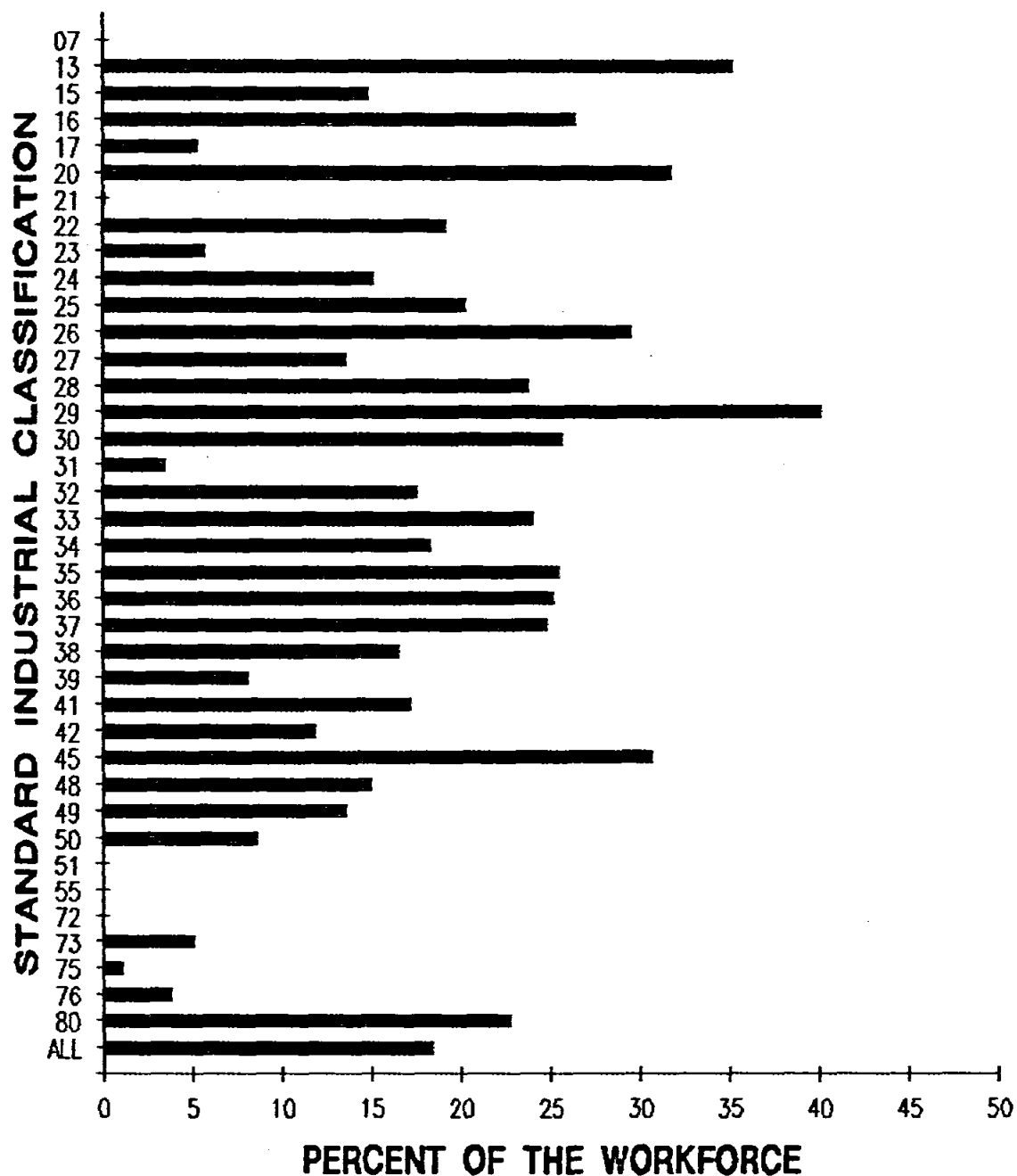
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
EMPLOY OCCUPATIONAL SAFETY PERSONNEL

SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	...	...	...	...	...	...	...	...
13	301* (180) 3.5%	531* (215) 52.1%	46* (52) 100.0%	878* (227) 9.1%	11591* (6543) 5.5%	103330* (42338) 59.4%	31383* (35291) 100.0%	146304* (55090) 35.3%
15	961* (478) 3.9%	171* (144) 15.4%	103* (96) 75.9%	1235* (510) 4.7%	24447* (13237) 4.3%	28365* (25347) 14.3%	80307* (65254) 59.6%	133119* (75517) 14.9%
16	707* (329) 6.3%	302* (120) 27.0%	77* (45) 71.9%	1086* (344) 8.7%	27220* (12046) 9.6%	46627* (16946) 22.4%	83132* (42938) 82.1%	156980* (40232) 26.5%
17	1020* (395) 1.8%	114* (63) 5.9%	...	1133* (390) 1.9%	49850* (24760) 4.0%	34881* (19860) 10.5%	...	84730* (26445) 5.4%
20	749* (391) 6.6%	656* (180) 20.4%	286* (103) 51.2%	1691 (398) 11.1%	38549* (19952) 9.9%	166882* (44194) 24.8%	290538* (92931) 59.1%	495970 (83030) 31.9%
21	4* (6) 14.6%	...	...	4* (6) 4.0%	258* (345) 13.8%	...	...	258* (345) .2%
22	...	190* (106) 12.0%	70* (43) 23.4%	260* (133) 5.4%	...	45409* (24024) 13.1%	92776* (60153) 35.5%	138184* (77267) 19.3%
23	49* (59) .4%	22* (26) .7%	63* (48) 25.9%	134* (86) .8%	2433* (2928) .6%	7229* (8322) 1.2%	62757* (47716) 30.1%	72419* (53206) 5.8%
24	...	351* (131) 30.6%	19* (8) 18.1%	370* (132) 3.1%	...	52569* (20171) 28.6%	35767* (18789) 38.7%	88336* (28005) 15.2%
25	...	48* (40) 4.5%	104* (71) 87.6%	152* (84) 2.8%	...	16229* (15748) 6.3%	89366* (57448) 72.7%	105595* (60402) 20.4%
26	231* (115) 5.6%	141* (76) 9.0%	174* (62) 81.5%	546* (170) 9.3%	13060* (7804) 9.5%	42842* (30030) 15.2%	129622* (46707) 62.7%	185523* (60641) 29.6%
27	180* (133) 1.0%	114* (77) 6.1%	68* (28) 21.5%	362* (158) 1.8%	7149* (5507) 1.5%	19645* (13910) 5.4%	135657* (53558) 39.2%	162450* (54157) 13.7%
28	207* (132) 3.3%	393* (105) 33.9%	182* (49) 47.8%	781 (161) 10.1%	10986* (6335) 6.1%	80484* (24122) 30.9%	127845* (34311) 26.8%	219314 (40362) 23.9%
29	73* (87) 7.2%	238* (120) 81.1%	32* (31) 31.7%	343* (182) 24.4%	6668* (7929) 16.3%	55462* (19608) 87.7%	26926* (26106) 22.9%	89057* (37262) 40.2%
30	168* (86) 2.5%	344* (150) 22.4%	95* (43) 42.3%	607* (191) 7.2%	11332* (5598) 5.0%	86173* (40979) 29.3%	96968* (42117) 41.5%	194473* (66207) 25.8%
31	...	36* (55) 6.3%	...	36* (55) 2.3%	...	6307* (9640) 4.7%	...	6307* (9640) 3.6%
32	158* (55) 1.8%	305* (121) 30.2%	59* (39) 32.2%	522* (140) 5.2%	10503* (4301) 4.4%	53210* (22759) 25.5%	38023* (25776) 29.5%	101735* (27593) 17.7%
33	289* (146) 7.0%	251* (87) 17.1%	125* (63) 37.1%	664 (156) 11.2%	17830* (8517) 12.9%	65611* (16649) 21.1%	174850* (70069) 28.1%	258291* (71269) 24.1%

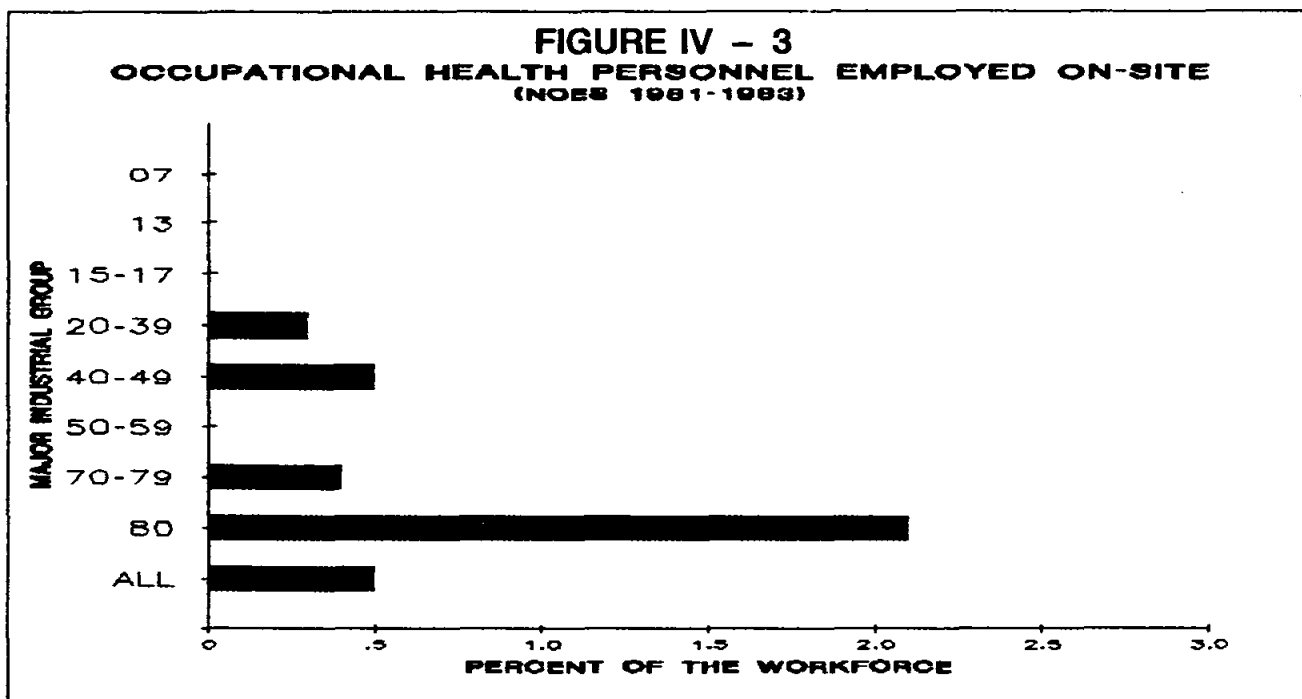
SIC CODE	PLANTS			TOTAL	EMPLOYEES			TOTAL
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)		SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	
34	453* (218) 2.4%	433 (108) 13.9%	159* (51) 45.8%	1045* (263) 4.8%	22632* (9599) 4.1%	94266* (27870) 15.8%	160134* (55112) 45.6%	277031 (63397) 18.4%
35	76* (61) .3%	689* (189) 20.2%	382 (78) 48.7%	1147 (214) 4.3%	4844* (3773) .8%	114790 (25793) 17.4%	490953 (108191) 44.1%	610587 (110591) 25.6%
36	102* (83) 1.4%	541* (164) 20.2%	264* (87) 33.6%	908 (195) 8.6%	6600* (5891) 2.9%	135953* (48490) 24.6%	354045* (98500) 29.9%	496598 (106480) 25.3%
37	465* (239) 11.7%	224* (94) 18.9%	153* (40) 36.9%	843* (258) 15.1%	30625* (16053) 24.1%	64041* (28982) 26.8%	373475 (75096) 24.7%	468141 (83533) 24.9%
38	52* (56) 1.9%	77* (47) 8.1%	128* (91) 30.7%	256* (123) 6.3%	3717* (4067) 3.6%	20928* (16489) 10.8%	101966* (74144) 22.1%	126611* (79746) 16.7%
39	...	77* (104) 9.7%	26* (26) 7.7%	103* (112) 1.3%	...	22613* (30429) 15.1%	20532* (20670) 9.8%	43145* (40425) 8.2%
41	...	180* (66) 35.3%	...	180* (66) 3.7%	...	34456* (26114) 42.3%	...	34456* (26114) 17.3%
42	568* (313) 2.8%	172* (106) 11.6%	21* (16) 25.0%	760* (340) 3.5%	39981* (24641) 8.2%	34267* (26083) 13.2%	24057* (28768) 32.1%	98305* (48659) 12.0%
45	...	118* (118) 20.0%	49* (28) 33.1%	167* (124) 4.2%	...	47505* (47505) 43.5%	91559* (59543) 34.6%	139064* (76246) 30.8%
48	...	265* (155) 29.4%	30* (20) 88.9%	295* (158) 1.9%	...	44502* (24570) 25.2%	56857* (37465) 81.1%	101359* (46034) 15.1%
49	67* (85) .8%	344* (194) 18.5%	18* (22) 10.3%	429* (212) 4.2%	2671* (3398) 1.0%	87697* (49149) 20.6%	25035* (31261) 17.1%	115403* (57031) 13.7%
50	694* (412) 2.3%	298* (195) 16.5%	...	992* (369) 3.1%	21548* (11460) 3.4%	58294* (46664) 20.6%	...	79842* (45253) 8.7%
51	...	...	...	...	...	...	...	...
55	...	...	...	...	...	...	...	...
72	...	...	...	...	...	...	...	...
73	85* (104) .5%	84* (35) 5.6%	24* (21) 7.1%	194* (110) 1.1%	4612* (5643) 1.1%	28462* (10064) 8.1%	24567* (17710) 7.5%	57641* (21463) 5.2%
75	114* (116) .4%	...	...	114* (116) .4%	5008* (5094) 1.2%	...	...	5008* (5094) 1.2%
76	204* (205) 2.1%	...	...	204* (205) 2.1%	7961* (8001) 4.5%	...	...	7961* (8001) 3.9%
80	...	239* (114) 11.0%	423* (114) 20.5%	662* (167) 9.4%	...	69338* (27350) 13.0%	765049 (170644) 25.3%	834386 (179500) 22.8%
All	7977 (1082) 1.8%	7947 (670) 16.0%	3196 (323) 33.9%	19120 (1532) 3.8%	382075 (56591) 3.5%	1768366 (153166) 18.1%	3993149 (354258) 32.0%	6143589 (418419) 18.5%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE IV - 2**  
**OCCUPATIONAL SAFETY PERSONNEL EMPLOYED ON-SITE**  
**(NOES 1981-1983)**







NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-3

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH EMPLOY OCCUPATIONAL HEALTH PERSONNEL

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...
15-17	...	...	...	...	...	...	...	...
20-39	108* (78) .1%	98* (77) .3%	13* (21) .2%	219* (83) .1%	7119* (5697) .2%	23387* (14143) .4%	27862* (43418) .3%	58368* (48792) .3%
40-49	...	92* (67) 1.6%	...	92* (67) .2%	...	14543* (10645) 1.3%	...	14543* (10645) .5%
50-59	...	...	...	...	...	...	...	...
70-79	...	24* (24) 1.0%	...	24* (24) .0%	...	9412* (9412) 2.0%	...	9412* (9412) .4%
80	...	23* (33) 1.1%	83* (40) 4.0%	106* (51) 1.5%	...	8693* (12479) 1.6%	67916* (33430) 2.2%	76609* (35528) 2.1%
ALL	108* (78) .0%	237* (110) .5%	96* (45) 1.0%	441* (121) .1%	7119* (5697) .1%	56035* (23614) .6%	95778* (54796) .8%	158932* (62006) .5%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
...No facilities observed.

NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-4

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
EMPLOY OCCUPATIONAL HEALTH PERSONNEL

SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...
21	...	...	...	...	...	...	...	...
22	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...
28	65* (48) 1.0%	71* (78) 6.1%	...	136* (86) 1.6%	3503* (2922) 1.9%	15296* (13932) 5.9%	...	18799* (13904) 2.0%
29	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...
31	...	...	...	...	...	...	...	...
32	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...

## NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983)

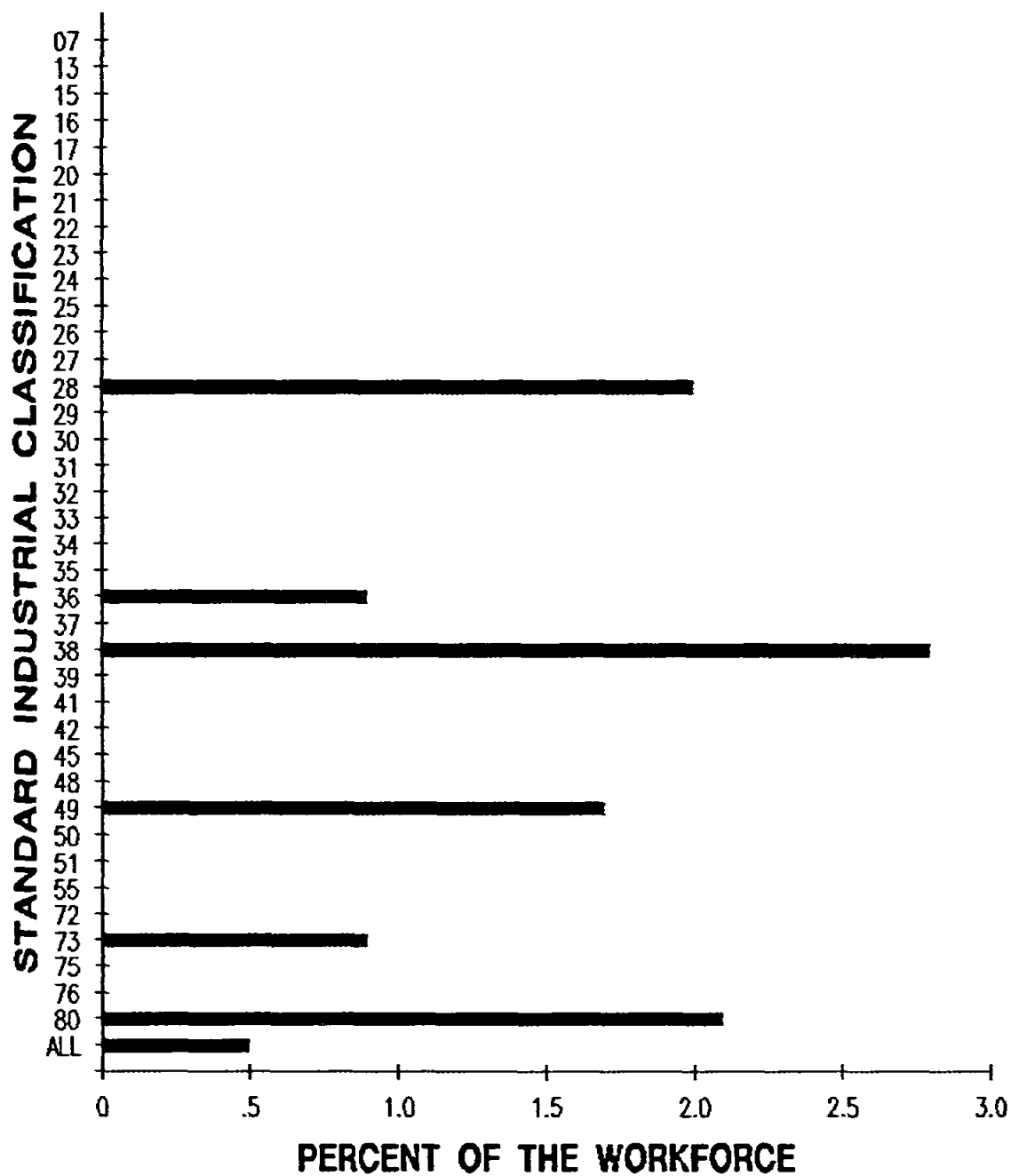
## TABLE NO. IV-4 (CONTINUED)

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...
36	44* (55) .6%	27* (23) 1.0%	2* (2) .3%	73* (57) .7%	3616* (4555) 1.6%	8091* (6946) 1.5%	6553* (6687) .6%	18261* (10596) .9%
37	...	...	...	...	...	...	...	...
38	...	...	11* (20) 2.6%	11* (20) .3%	...	...	21308* (41006) 4.6%	21308* (41006) 2.8%
39	...	...	...	...	...	...	...	...
41	...	...	...	...	...	...	...	...
42	...	...	...	...	...	...	...	...
45	...	...	...	...	...	...	...	...
48	...	...	...	...	...	...	...	...
49	...	92* (67) 4.9%	...	92* (67) .9%	...	14543* (10645) 3.4%	...	14543* (10645) 1.7%
50	...	...	...	...	...	...	...	...
51	...	...	...	...	...	...	...	...
55	...	...	...	...	...	...	...	...
72	...	...	...	...	...	...	...	...
73	...	24* (24) 1.6%	...	24* (24) .1%	...	9412* (9412) 2.7%	...	9412* (9412) .9%
75	...	...	...	...	...	...	...	...
76	...	...	...	...	...	...	...	...
80	...	23* (33) 1.1%	83* (40) 4.0%	106* (51) 1.5%	...	8693* (12479) 1.6%	67916* (33430) 2.2%	76609* (35528) 2.1%
All	108* (78) .0%	237* (95) .5%	96* (45) 1.0%	441* (116) .1%	7119* (5697) .1%	56035* (18889) .6%	95778* (55511) .8%	158932* (59479) .5%

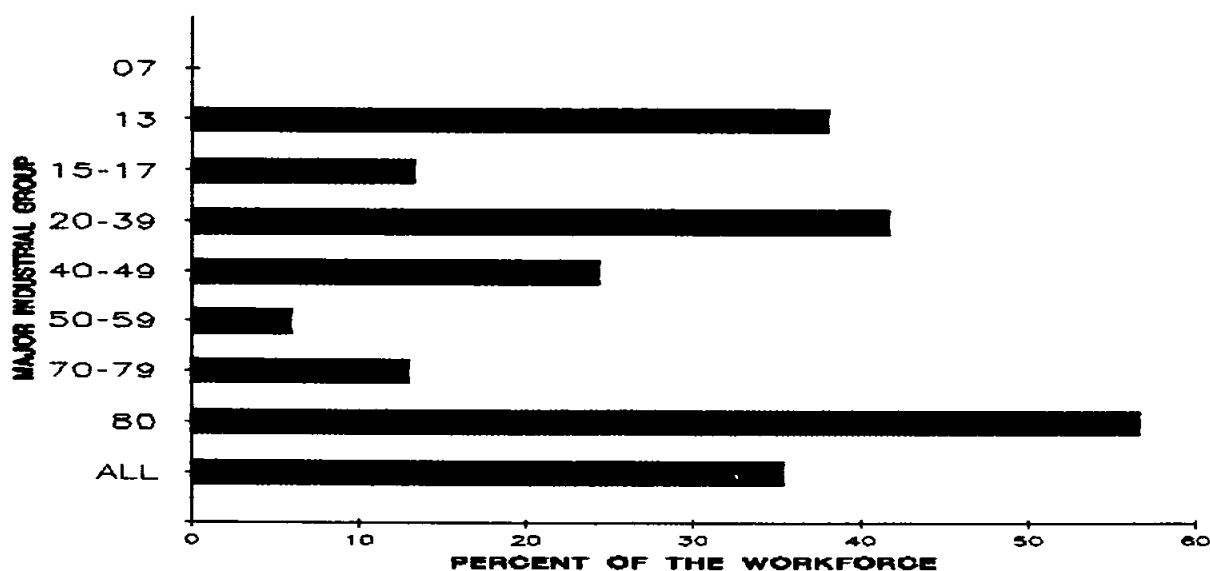
\*Standard error &gt;25% of the estimate. The estimate may be unreliable.

...No facilities observed.

**FIGURE IV - 4**  
**OCCUPATIONAL HEALTH PERSONNEL EMPLOYED ON-SITE**  
**(NOES 1981-1983)**



**FIGURE IV - 5**  
**OCCUPATIONAL HEALTH AND/OR SAFETY PERSONNEL ON-SITE**  
**(NOES 1981-1983)**



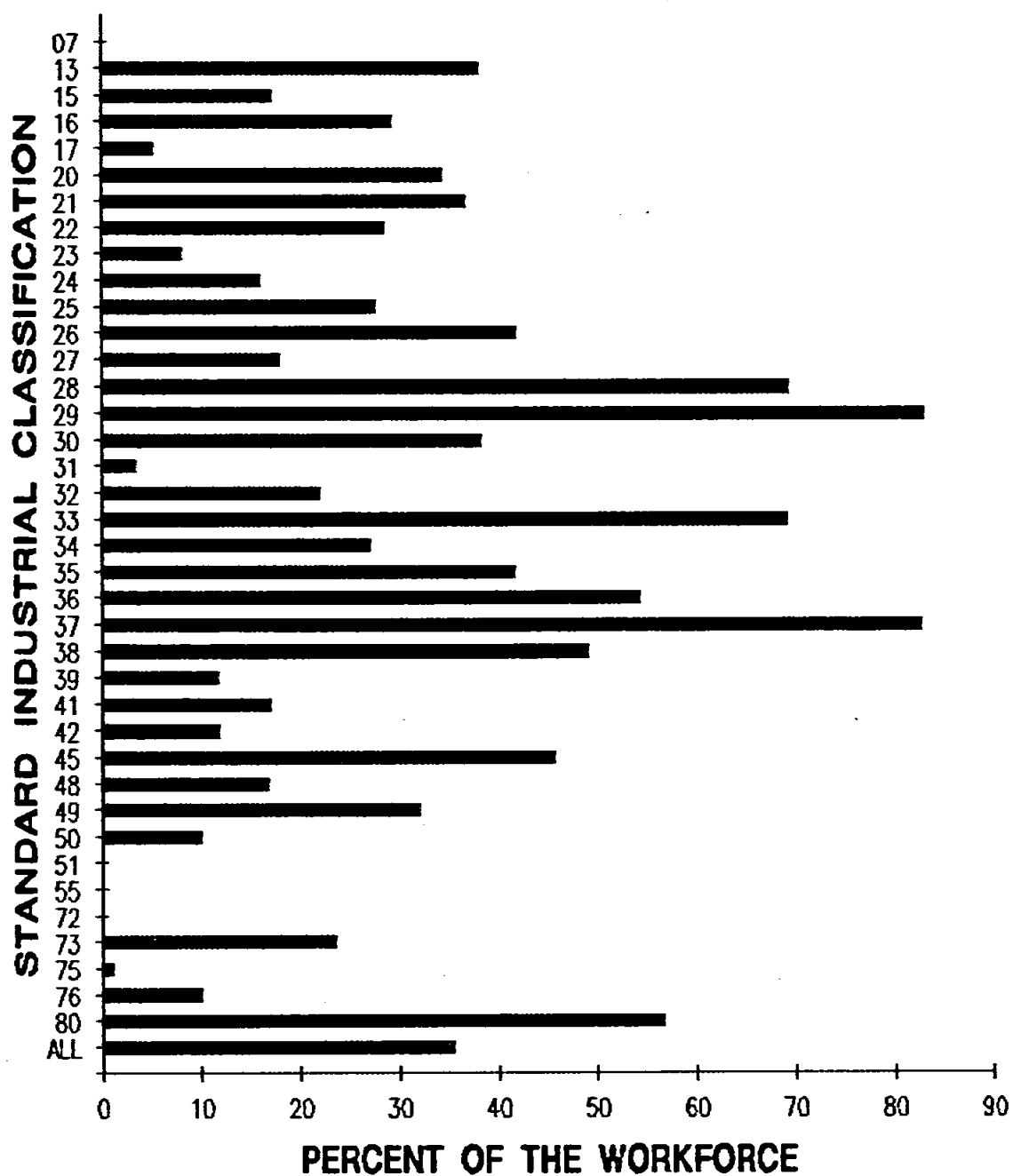
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-5

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 EMPLOY OCCUPATIONAL HEALTH AND/OR SAFETY PERSONNEL

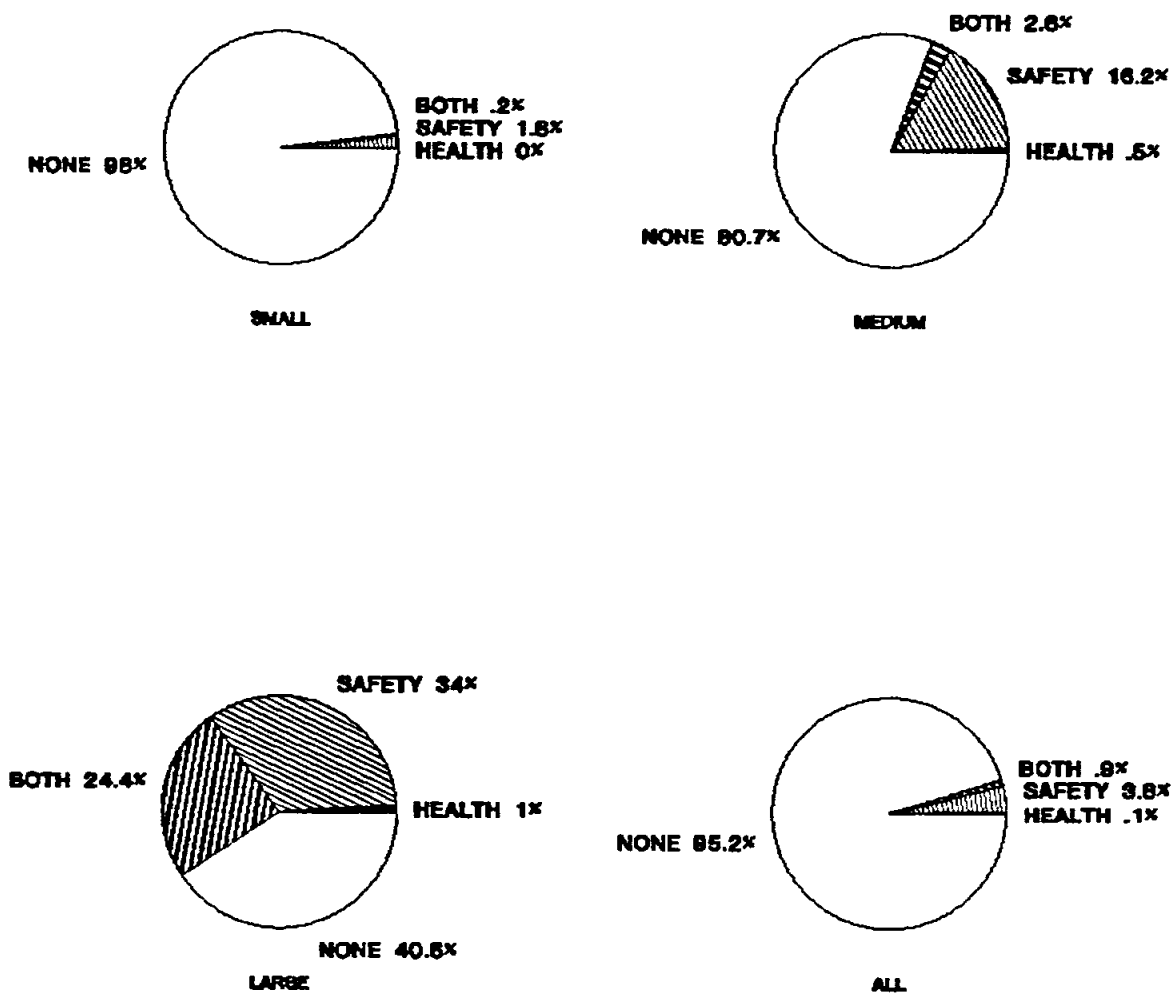
MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	...	...	...	...	...	...	...	...
13	301* (180) 3.5%	571* (243) 56.0%	46* (52) 100.0%	918* (246) 9.5%	11591* (6543) 5.5%	115258* (50752) 66.3%	31383* (35291) 100.0%	158232* (61655) 38.2%
15-17	2696 (571) 2.9%	593* (189) 14.3%	215* (126) 88.7%	3504 (665) 3.5%	102075* (26435) 4.9%	112213* (29828) 15.2%	201722* (91277) 85.5%	416010 (93389) 13.5%
20-39	3476 (727) 2.3%	6012 (686) 18.9%	3879 (227) 61.9%	13367 (1185) 7.0%	201219 (37902) 4.4%	1398485 (148255) 21.9%	6464070 (263469) 78.2%	8063774 (343992) 41.9%
40-49	1308* (615) 2.5%	1435* (422) 24.6%	203* (53) 43.4%	2947* (876) 5.0%	87917* (41287) 6.1%	329958* (104764) 28.6%	357973* (89511) 62.4%	775849 (165804) 24.5%
50-59	694* (412) 1.2%	341* (179) 12.8%	...	1035* (357) 1.7%	21548* (11460) 1.9%	71349* (41995) 17.5%	...	92896* (39516) 6.1%
70-79	403* (174) .6%	255* (87) 10.9%	159* (110) 45.0%	818* (213) 1.1%	17581* (7895) 1.3%	83176* (26384) 17.9%	186692* (92115) 55.0%	287449* (87395) 13.1%
80	48* (50) 1.7%	429* (144) 19.8%	1110 (188) 53.9%	1587 (265) 22.5%	4656* (4899) 4.6%	128434* (38580) 24.0%	1944343 (296273) 64.3%	2077434 (309988) 56.8%
ALL	8926 (1212) 2.0%	9638 (897) 19.3%	5612 (347) 59.4%	24176 (1708) 4.8%	446588 (64035) 4.0%	2238873 (200920) 22.7%	9186183 (428098) 73.7%	11871644 (513455) 35.5%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE IV - 6**  
**OCCUPATIONAL HEALTH AND/OR SAFETY PERSONNEL ON-SITE**  
**(NOES 1981-1983)**



**FIGURE IV - 7**  
**PLANTS WITH HEALTH OR SAFETY PERSONNEL**  
**(NOES 1981-1983)**



NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
EMPLOY OCCUPATIONAL HEALTH AND/OR SAFETY PERSONNEL

SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	...	...	...	...	...	...	...	...
13	301* (180) 3.5%	571* (243) 56.0%	46* (52) 100.0%	918* (246) 9.5%	11591* (6543) 5.5%	115258* (50752) 66.3%	31383* (35291) 100.0%	158232* (61655) 38.2%
15	961* (478) 3.9%	178* (139) 16.1%	108* (95) 79.6%	1247* (506) 4.8%	24447* (13237) 4.3%	30705* (23475) 15.5%	100464* (64597) 74.5%	155616* (67943) 17.4%
16	707* (329) 6.3%	302* (120) 27.0%	107* (67) 100.0%	1116* (346) 8.9%	27220* (12046) 9.6%	46627* (16946) 22.4%	101258* (53561) 100.0%	175106* (48200) 29.5%
17	1028* (397) 1.8%	114* (63) 5.9%	...	1141* (392) 1.9%	50407* (25029) 4.0%	34881* (19860) 10.5%	...	85288* (26870) 5.4%
20	749* (391) 6.6%	672* (179) 20.9%	311* (107) 55.6%	1732 (403) 11.4%	38549* (19952) 9.9%	174177* (45192) 25.9%	324568* (94959) 66.0%	537294 (89650) 34.6%
21	4* (6) 14.6%	...	11* (11) 13.5%	15* (8) 13.8%	258* (345) 13.8%	...	41763* (36135) 37.2%	42021* (35930) 36.9%
22	...	266* (116) 16.7%	129* (62) 43.0%	394* (147) 8.2%	...	73331* (28622) 21.1%	131652* (65101) 50.4%	204984* (81408) 28.7%
23	49* (59) .4%	22* (26) .7%	74* (48) 30.6%	145* (87) .9%	2433* (2928) .6%	7229* (8322) 1.2%	92322* (51954) 44.3%	101984* (56477) 8.2%
24	45* (61) .4%	360* (131) 31.4%	19* (8) 18.1%	424* (129) 3.5%	3452* (4723) 1.1%	54709* (20075) 29.8%	35767* (18789) 38.7%	93928* (27037) 16.2%
25	...	63* (41) 5.9%	119* (75) 99.6%	181* (84) 3.4%	...	21181* (15913) 8.3%	122998* (62394) 100.0%	144179* (62394) 27.8%
26	231* (115) 5.6%	141* (76) 9.0%	214* (73) 100.0%	586* (177) 9.9%	13060* (7804) 9.5%	42842* (30030) 15.2%	206864* (65220) 100.0%	262766* (75091) 42.0%
27	180* (133) 1.0%	114* (77) 6.1%	126* (41) 39.9%	420* (151) 2.1%	7149* (5507) 1.5%	19645* (13910) 5.4%	188118* (53110) 54.4%	214911* (54487) 18.1%
28	310* (123) 5.0%	651 (144) 56.1%	364 (63) 95.7%	1326 (259) 17.2%	16374* (6209) 9.1%	155715 (34601) 59.7%	465866 (102724) 97.8%	637955 (111900) 69.5%
29	73* (87) 7.2%	264* (124) 90.1%	101* (42) 100.0%	439* (191) 31.2%	6668* (7929) 16.3%	60212* (21521) 95.2%	117545* (70259) 100.0%	184426* (78981) 83.2%
30	168* (86) 2.5%	344* (150) 22.4%	186* (74) 83.0%	698* (202) 8.2%	11332* (5598) 5.0%	86173* (40979) 29.3%	192174* (72616) 82.2%	289679* (87707) 38.5%
31	...	36* (55) 6.3%	...	36* (55) 2.3%	...	6307* (9640) 4.7%	...	6307* (9640) 3.6%
32	158* (55) 1.8%	346* (114) 34.2%	67* (42) 36.6%	571 (125) 5.7%	10503* (4301) 4.4%	70546* (21564) 33.8%	46424* (34551) 36.0%	127472* (34343) 22.2%
33	289* (146) 7.0%	445* (149) 30.3%	321 (60) 95.2%	1054 (222) 17.8%	17830* (8517) 12.9%	113972* (31089) 36.6%	610958 (79856) 98.3%	742760 (89592) 69.3%



SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	482* (224) 2.6%	484 (109) 15.5%	247* (82) 71.3%	1212 (292) 5.5%	24209* (9869) 4.4%	105257* (26433) 17.6%	280519* (107635) 79.9%	409985* (117880) 27.3%
35	76* (61) .3%	798* (217) 23.5%	488 (70) 62.3%	1363 (248) 5.1%	4844* (3773) .8%	143378* (37096) 21.7%	848519 (142374) 76.2%	996740 (143981) 41.9%
36	145* (87) 2.0%	584* (162) 21.7%	458 (110) 58.2%	1187 (189) 11.2%	10217* (6472) 4.4%	148356* (48033) 26.8%	912382 (175099) 77.2%	1070955 (170464) 54.5%
37	465* (239) 11.7%	224* (94) 18.9%	343 (61) 82.5%	1033* (260) 18.5%	30625* (16053) 24.1%	64041* (28982) 26.8%	1463549 (246358) 96.7%	1558215 (256097) 82.9%
38	52* (56) 1.9%	120* (65) 12.5%	266* (105) 63.8%	437* (132) 10.8%	3717* (4067) 3.6%	28801* (18184) 14.8%	342086* (119956) 74.3%	374604* (122056) 49.3%
39	...	77* (104) 9.7%	36* (26) 10.7%	113* (111) 1.5%	...	22613* (30429) 15.1%	39998* (24337) 19.1%	62611* (41294) 11.9%
41	...	180* (66) 35.3%	...	180* (66) 3.7%	...	34456* (26114) 42.3%	...	34456* (26114) 17.3%
42	568* (313) 2.8%	172* (106) 11.6%	21* (16) 25.0%	760* (340) 3.5%	39981* (24641) 8.2%	34267* (26083) 13.2%	24057* (28768) 32.1%	98305* (48659) 12.0%
45	...	118* (118) 20.0%	58* (28) 39.3%	176* (122) 4.4%	...	47505* (47505) 43.5%	159442* (74841) 60.3%	206947* (80636) 45.9%
48	...	265* (155) 29.4%	34* (21) 99.0%	299* (158) 1.9%	...	44502* (24570) 25.2%	70083* (43687) 100.0%	114585* (51978) 17.0%
49	740* (526) 9.0%	561* (249) 30.1%	59* (34) 33.9%	1359* (630) 13.3%	47936* (34388) 17.8%	136933* (61094) 32.2%	86381* (45728) 58.9%	271250* (95740) 32.2%
50	694* (412) 2.3%	341* (179) 18.9%	...	1035* (357) 3.2%	21548* (11460) 3.4%	71349* (41995) 25.2%	...	92896* (39516) 10.2%
51	...	...	...	...	...	...	...	...
55	...	...	...	...	...	...	...	...
72	...	...	...	...	...	...	...	...
73	85* (104) .5%	219* (83) 14.7%	159* (110) 46.8%	464* (157) 2.5%	4612* (5643) 1.1%	70503* (23981) 20.2%	186692* (92115) 56.8%	261807* (90069) 23.8%
75	114* (116) .4%	...	...	114* (116) .4%	5008* (5094) 1.2%	...	...	5008* (5094) 1.2%
76	204* (205) 2.1%	36* (45) 29.4%	...	240* (207) 2.4%	7961* (8001) 4.5%	12672* (15755) 52.1%	...	20633* (17170) 10.2%
80	48* (50) 1.7%	429* (144) 19.8%	1110 (188) 53.9%	1587 (265) 22.5%	4656* (4899) 4.6%	128434* (38580) 24.0%	1944343 (296273) 64.3%	2077434 (309988) 56.8%
All	8926 (1062) 2.0%	9498 (740) 19.2%	5596 (361) 59.4%	24020 (1584) 4.8%	446588 (58428) 4.1%	2206578 (169630) 22.6%	9177178 (397735) 73.7%	11830343 (404244) 35.6%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**NOES QUESTIONNAIRE ITEM NO. 29**  
**Occupational Health and Safety Specialists and Their Activities**

**Intent**

The intent of this question was to determine the number of occupational health and safety specialists employed by industry and to describe their major duties.

This item was displayed on the questionnaire as:

29. How many full-time occupational health and safety specialists are employed at this facility?

- Safety (injuries)
- Health (illnesses)

For each of those individuals, please write in the appropriate activity number from the activity clusters listed below:

**CLUSTER NO.**

- |                  |  |
|------------------|--|
| Individual #1 _  | 1: Administers (directs, manages) Plans and develops programs, Advises top level management.           |
| Individual #2 _  | 2: Inspects work place to identify hazards. Investigates to determine the cause of injuries/illnesses. |
| Individual #3 _  | 3: Analyzes plans or specs. to identify hazards, develops operating procedures to control hazards.     |
| Individual #4 _  | 4: Provides education and training   |
| Individual #5 _  | 5: Performs and analyzes tests to monitor for the presence of dusts, gases, etc.                       |
| Individual #6 _  | 6: Performs engineering design to control hazards  |
| Individual #7 _  |  |
| Individual #8 _  |  |
| Individual #9 _  |  |
| Individual #10 _ |  |
| Individual #11 _ |  |
| Individual #12 _ |  |

**Notes**

Occupational health and safety personnel were described in the text for questionnaire item number 28.

Persons included or excluded by these descriptions are also defined in the questionnaire item number 28 text.

The assignment of one of the activity cluster numbers to one or more of the individuals employed within a facility was based on agreement of that person's duties to the description given, and performance of task(s) outlined by the activity description for more than 50% of his or her working time.

## **Analysis**

Three analyses of the responses to question 29 are presented.

**(1) Response 29 - Estimated number of occupational health and safety specialists**

Estimates of the number of occupational health and safety specialists employed in the NOES sampling frame are displayed in Figures IV-8, IV-9, and IV-10, and Tables IV-7 and IV-8.

Figure IV-8	Estimated number of occupational health and safety professionals employed in industry (by major industrial group)
Figure IV-9	Estimated number of occupational health and safety professionals employed in industry (by 2-digit SIC)
Figure IV-10	Estimated proportions of occupational health or safety personnel employed by plant size
Table IV-7	Estimated number of occupational health and safety specialists employed in industry (by major industrial group)
Table IV-8	Estimated number of occupational health and safety specialists employed in industry (by 2-digit SIC)

**(2) Response 29 - Estimated number of occupational health or safety specialists employed per 10,000 workers**

Estimates of the number of occupational health and safety specialists employed by industry for each 10,000 workers are displayed in Figures IV-11 and IV-12, and Tables IV-9 and IV-10.

Figure IV-11	Estimated number of occupational health or safety personnel employed per 10,000 workers (by major industrial group)
Figure IV-12	Estimated number of occupational health or safety personnel employed per 10,000 workers (by 2-digit SIC)
Table IV-9	Estimated number of occupational health and safety professionals employed per 10,000 workers (by major industrial group)
Table IV-10	Estimated number of occupational health and safety professionals employed per 10,000 workers (by 2-digit SIC)

**(3) Response 29 (activities) - Major activities of occupational health and safety personnel**

As displayed in the analysis of the responses to questionnaire item number 28, an estimated 4.8% of all industrial facilities (accounting for approximately 35% of the estimated workforce) in the NOES sample frame employ occupational health or safety personnel on-site.

Within this subset of the survey sample frame, Figure IV-13 displays the estimated proportions of plants and workers in plants by specific occupational health or safety activity. These activities are displayed proportionately, since more than one activity may occur in any facility.

**Figure IV-13**            Occupational safety and health activities in plants  
                                 employing specialists by plants and workers

The estimated number of plants (in the subset discussed above) by health and safety activity are displayed in Tables IV-11 and IV-12. No attempt should be made to total across columns to arrive at an overall total since more than one activity may have occurred in one plant.

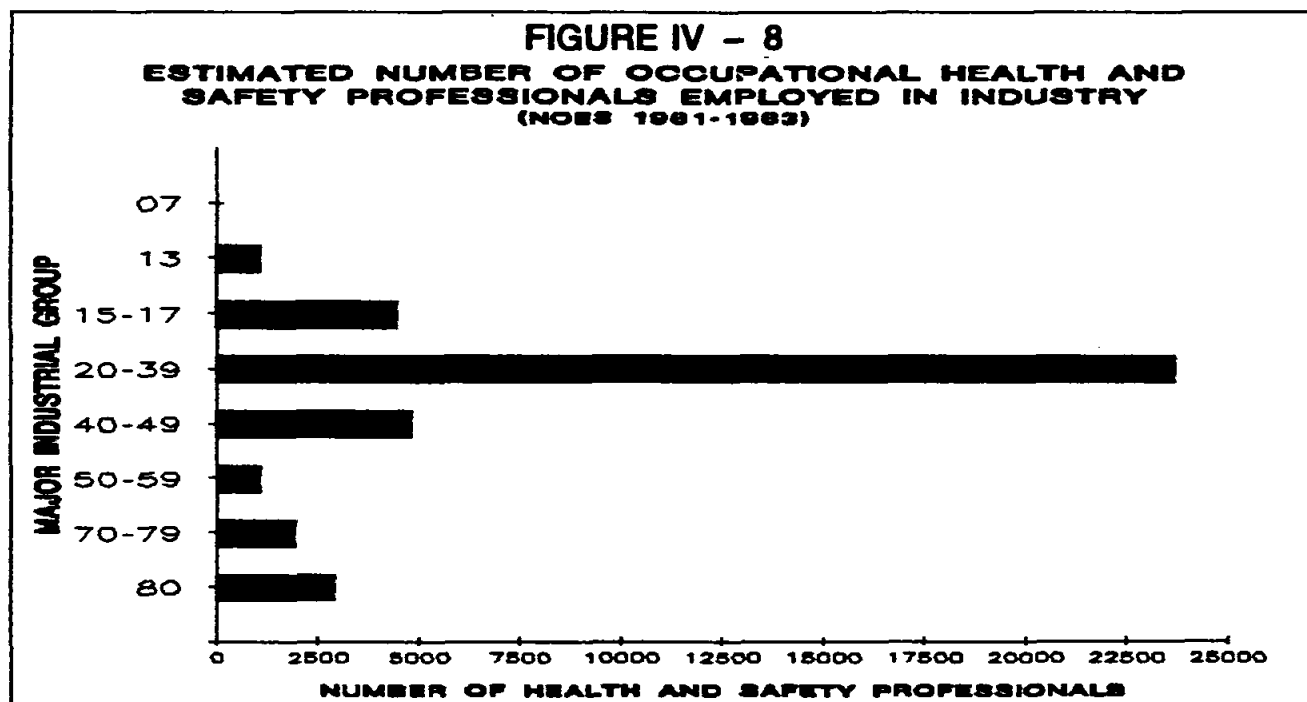
**Table IV-11**            Number and percent of plants by occupational health and  
                                 safety activity (by major industrial group)

**Table IV-12**            Number and percent of plants by occupational health and  
                                 safety activity (by 2-digit SIC)

The estimated number of workers in plants (again within the 35% of the workforce discussed above) by health and safety activity are displayed in Tables IV-13 and IV-14. The precaution against row totalling is also valid here.

**Table IV-13**            Number and percent of workers in plants by occupational  
                                 health and safety activity (by major industrial group)

**Table IV-14**            Number and percent of workers in plants by occupational  
                                 health and safety activity (by 2-digit SIC)



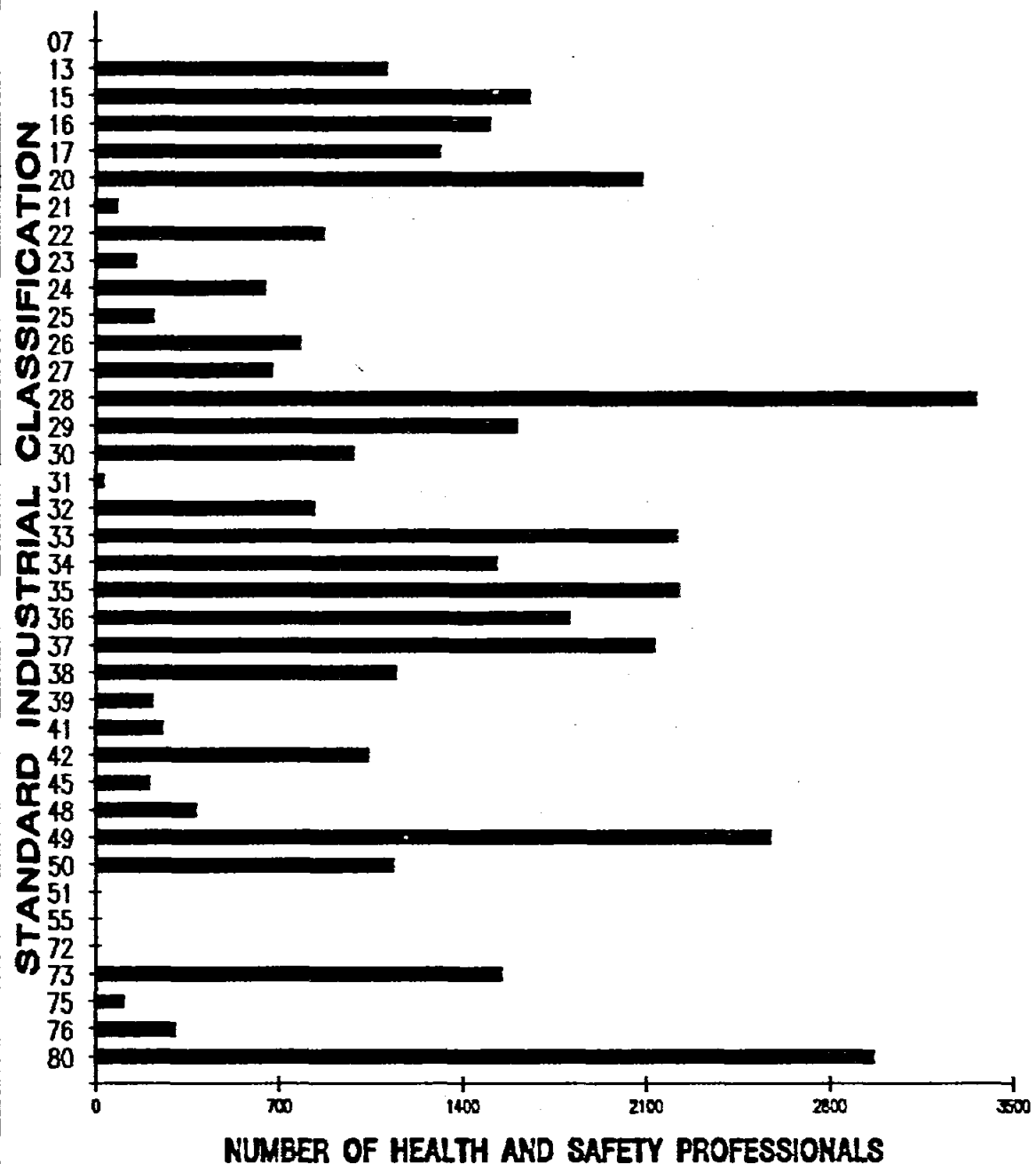
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-7

**ESTIMATED NUMBER OF OCCUPATIONAL HEALTH AND SAFETY**  
**SPECIALISTS EMPLOYED IN INDUSTRY**

MAJOR GROUP	HEALTH SPECIALISTS PLANT SIZE			TOTAL	SAFETY SPECIALISTS PLANT SIZE			TOTAL
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)		SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	
07	...	...	...	...	...	...	...	...
13	...	40* (3) 1.8%	...	40* (31) 0.5%	301* (180) 3.1%	730* (361) 6.3%	46* (52) 0.4%	1077* (342) 3.3%
15-17	16* (21) 1.4%	14* (16) 0.6%	35* (47) 0.7%	65* (65) 0.8%	3031 (572) 30.7%	1102* (355) 9.5%	293* (132) 2.7%	4426 (709) 13.7%
20-39	384* (214) 34.3%	1273* (349) 58.9%	3311 (356) 69.5%	4967 (588) 60.5%	3729 (819) 37.8%	6951 (850) 59.6%	8070 (726) 75.3%	18750 (1515) 58.2%
40-49	673* (511) 60.1%	294* (157) 13.6%	97* (48) 2.0%	1064* (479) 13.2%	1655* (759) 16.8%	1671* (462) 14.3%	468* (154) 4.4%	3795* (1054) 11.8%
50-59	...	63* (43) 2.9%	...	63* (43) 0.8%	694* (412) 7.0%	384* (167) 3.3%	...	1078* (346) 3.3%
70-79	...	253* (117) 11.7%	361* (262) 7.6%	614* (257) 7.6%	403* (174) 4.1%	363* (138) 3.1%	602* (323) 5.6%	1369* (396) 4.2%
80	48* (50) 4.3%	227* (119) 10.5%	959 (135) 20.1%	1233 (195) 15.3%	48* (50) 0.5%	454* (181) 3.9%	1237 (197) 11.5%	1738 (295) 5.4%
ALL	1120* (557) 100.0%	2163 (422) 100.0%	4763 (467) 100.0%	8047 (828) 100.0%	9862 (1345) 100.0%	11655 (1128) 100.0%	10716 (845) 100.0%	32233 (2095) 100.0%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

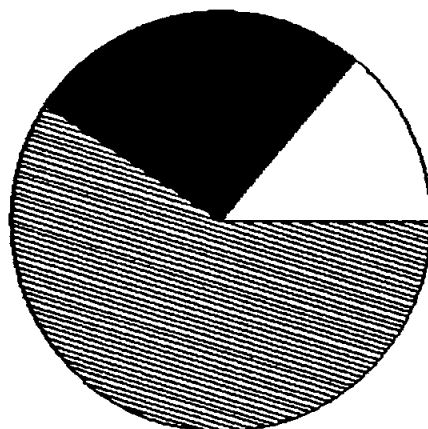
**FIGURE IV-9**  
**ESTIMATED NUMBER OF OCCUPATIONAL HEALTH AND**  
**SAFETY PROFESSIONALS EMPLOYED IN INDUSTRY**  
 (NOES 1981-1983)



**FIGURE IV-10**  
**ESTIMATED PROPORTIONS OF OCCUPATIONAL HEALTH**  
**OR SAFETY PERSONNEL EMPLOYED BY PLANT SIZE**  
**(NOES 1981-1983)**

MEDIUM PLANTS 26.9%

SMALL PLANTS 13.9%

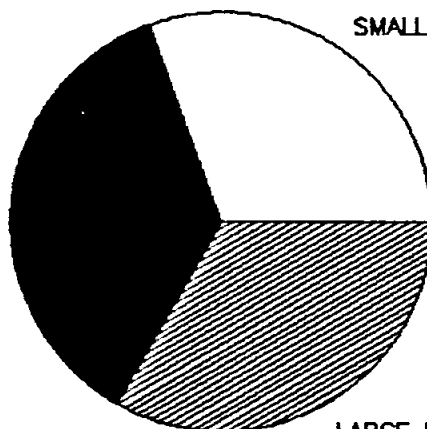


LARGE PLANTS 59.2%

**OCCUPATIONAL HEALTH**

SMALL PLANTS 30.6%

MEDIUM PLANTS 36.2%



LARGE PLANTS 33.2%

**OCCUPATIONAL SAFETY**

## NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-8

ESTIMATED NUMBER OF OCCUPATIONAL HEALTH AND SAFETY  
SPECIALISTS EMPLOYED IN INDUSTRY

SIC CODE	HEALTH SPECIALISTS PLANT SIZE				SAFETY SPECIALISTS PLANT SIZE			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	...	...	...	...	...	...	...	...
13	...	40* (31) 1.8%	...	40* (31) 0.5%	301* (180) 3.1%	730* (361) 6.5%	46* (52) 0.4%	1077* (342) 3.4%
15	...	14* (16) 0.6%	5* (5) 0.1%	19* (21) 0.2%	1136* (558) 11.5%	356* (277) 3.1%	154* (96) 1.4%	1645* (602) 5.2%
16	...	...	30* (46) 0.6%	30* (46) 0.4%	707* (329) 7.2%	633* (257) 5.6%	139* (70) 1.3%	1479* (374) 4.6%
17	16* (21) 1.4%	...	...	16* (21) 0.2%	1189* (431) 12.1%	114* (63) 1.0%	...	1302* (414) 4.1%
20	...	16* (21) 0.7%	72* (60) 1.5%	87* (64) 1.1%	749* (391) 7.6%	859* (291) 7.6%	391* (136) 3.7%	1999 (446) 6.3%
21	...	...	50* (54) 1.0%	50* (54) 0.6%	4* (6) .0%	...	36* (43) 0.3%	41* (39) 0.1%
22	...	175* (114) 8.1%	168* (181) 3.5%	343* (285) 4.3%	...	315* (125) 2.8%	219* (121) 2.0%	534* (210) 1.7%
23	...	...	11* (8) 0.2%	11* (8) 0.1%	49* (59) 0.5%	22* (26) 0.2%	74* (48) 0.7%	145* (87) 0.5%
24	90* (123) 8.0%	18* (17) 0.8%	...	108* (120) 1.3%	90* (123) 0.9%	412* (156) 3.6%	45* (19) 0.4%	546* (170) 1.7%
25	...	15* (29) 0.7%	18* (22) 0.4%	32* (37) 0.4%	...	63* (41) 0.6%	131* (74) 1.2%	194* (82) 0.6%
26	...	...	105* (102) 2.2%	105* (102) 1.3%	231* (115) 2.3%	141* (76) 1.2%	312* (114) 2.9%	684* (208) 2.1%
27	...	...	99* (80) 2.1%	99* (80) 1.2%	180* (133) 1.8%	270* (224) 2.4%	131* (41) 1.2%	580* (244) 1.8%
28	222* (159) 19.8%	484* (266) 22.4%	485* (201) 10.2%	1191* (304) 14.8%	246* (129) 2.5%	760* (211) 6.7%	1165* (414) 10.9%	2170* (565) 6.8%
29	...	26* (35) 1.2%	172* (177) 3.6%	198* (187) 2.5%	147* (174) 1.5%	445* (166) 3.9%	824* (582) 7.7%	1416* (651) 4.4%
30	...	...	109* (83) 2.3%	109* (83) 1.4%	213* (108) 2.2%	353* (147) 3.1%	317* (178) 3.0%	882* (275) 2.8%
31	...	...	...	...	...	36* (55) 0.3%	...	36* (55) 0.1%
32	...	70* (57) 3.2%	32* (106) 0.7%	102* (139) 1.3%	207* (83) 2.1%	363* (112) 3.2%	166* (110) 1.6%	737* (188) 2.3%
33	...	222* (183) 10.3%	390* (112) 8.2%	613* (210) 7.6%	289* (146) 2.9%	587* (186) 5.2%	735 (133) 6.9%	1610 (297) 5.1%

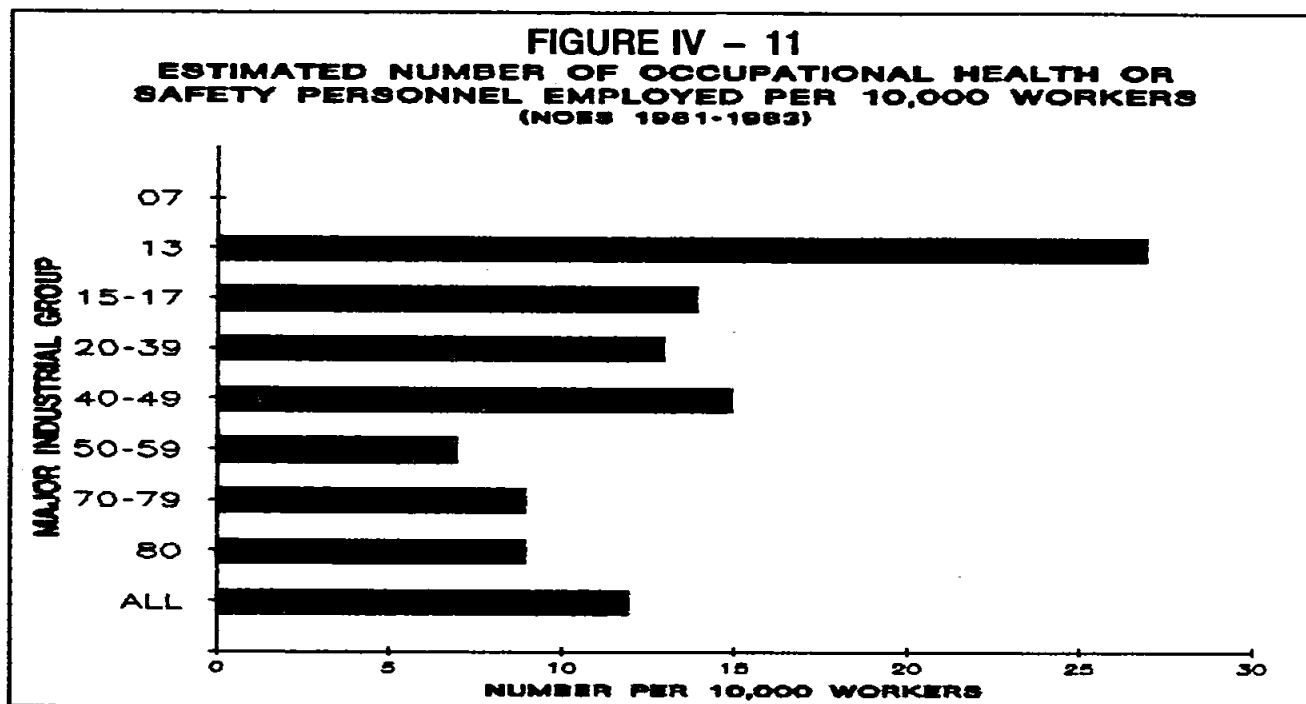


## NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983)

## TABLE NO. IV-8 (CONTINUED)

SIC CODE	HEALTH SPECIALISTS PLANT SIZE				SAFETY SPECIALISTS PLANT SIZE			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	29* (40) 2.6%	51* (32) 2.4%	97* (65) 2.0%	177* (77) 2.2%	547* (268) 5.5%	508 (100) 4.5%	304* (97) 2.8%	1358 (328) 4.3%
35	...	110* (88) 5.1%	279* (76) 5.9%	389* (106) 4.8%	76* (61) 0.8%	819* (219) 7.2%	948 (146) 8.9%	1843 (281) 5.8%
36	44* (55) 3.9%	42* (27) 1.9%	302* (100) 6.3%	388* (124) 4.8%	102* (83) 1.0%	576* (167) 5.1%	747 (153) 7.0%	1424 (231) 4.5%
37	...	...	370 (90) 7.8%	370 (90) 4.8%	549* (276) 5.6%	224* (94) 2.0%	993 (114) 9.3%	1767 (321) 5.5%
38	...	43* (37) 2.0%	480* (378) 10.1%	523* (379) 6.5%	52* (56) 0.5%	120* (65) 1.1%	456* (169) 4.3%	628* (181) 2.0%
39	...	...	70* (68) 1.5%	70* (68) 0.9%	...	77* (104) 0.7%	76* (50) 0.7%	153* (116) 0.5%
41	...	...	...	...	...	264* (1821) 2.3%	...	264* (182) 0.8%
42	...	...	...	...	849* (499) 8.6%	180* (112) 1.6%	21* (16) 0.2%	1049* (534) 3.3%
45	...	...	15* (5) 0.3%	15* (5) 0.2%	...	118* (118) 1.0%	77* (31) 0.7%	195* (121) 0.6%
48	...	...	41* (44) 0.9%	41* (44) 0.5%	...	265* (155) 2.3%	80* (57) 0.7%	345* (170) 1.1%
49	673* (511) 60.1%	294* (157) 13.6%	41* (25) 0.9%	1008* (470) 12.5%	806* (553) 8.2%	508* (224) 4.5%	257* (142) 2.4%	1571* (619) 4.9%
50	...	63* (43) 2.9%	...	63* (43) 0.8%	694* (412) 7.0%	384* (167) 3.4%	...	1078* (346) 3.4%
51	...	...	...	...	...	...	...	...
55	...	...	...	...	...	...	...	...
72	...	...	...	...	...	...	...	...
73	...	180* (99) 8.3%	361* (262) 7.6%	542* (265) 6.7%	85* (104) .9%	327* (131) 2.9%	602* (323) 5.6%	1015* (370) 3.2%
75	...	...	...	...	114* (116) 1.2%	...	...	114* (116) 0.4%
76	...	72* (90) 3.3%	...	72* (90) 0.9%	204* (205) 2.1%	36* (45) 0.3%	...	240* (207) 0.8%
80	48* (50) 4.3%	227* (119) 10.5%	959 (135) 20.1%	1233 (195) 15.3%	48* (50) 0.5%	454* (181) 4.0%	1237 (197) 11.6%	1738 (295) 5.5%
ALL	1120* (564) 100.0%	2163 (478) 100.0%	4763 (452) 100.0%	8047 (803) 100.0%	9862 (1144) 100.0%	11317 (1068) 100.0%	10700 (899) 100.0%	31879 (1992) 100.0%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.



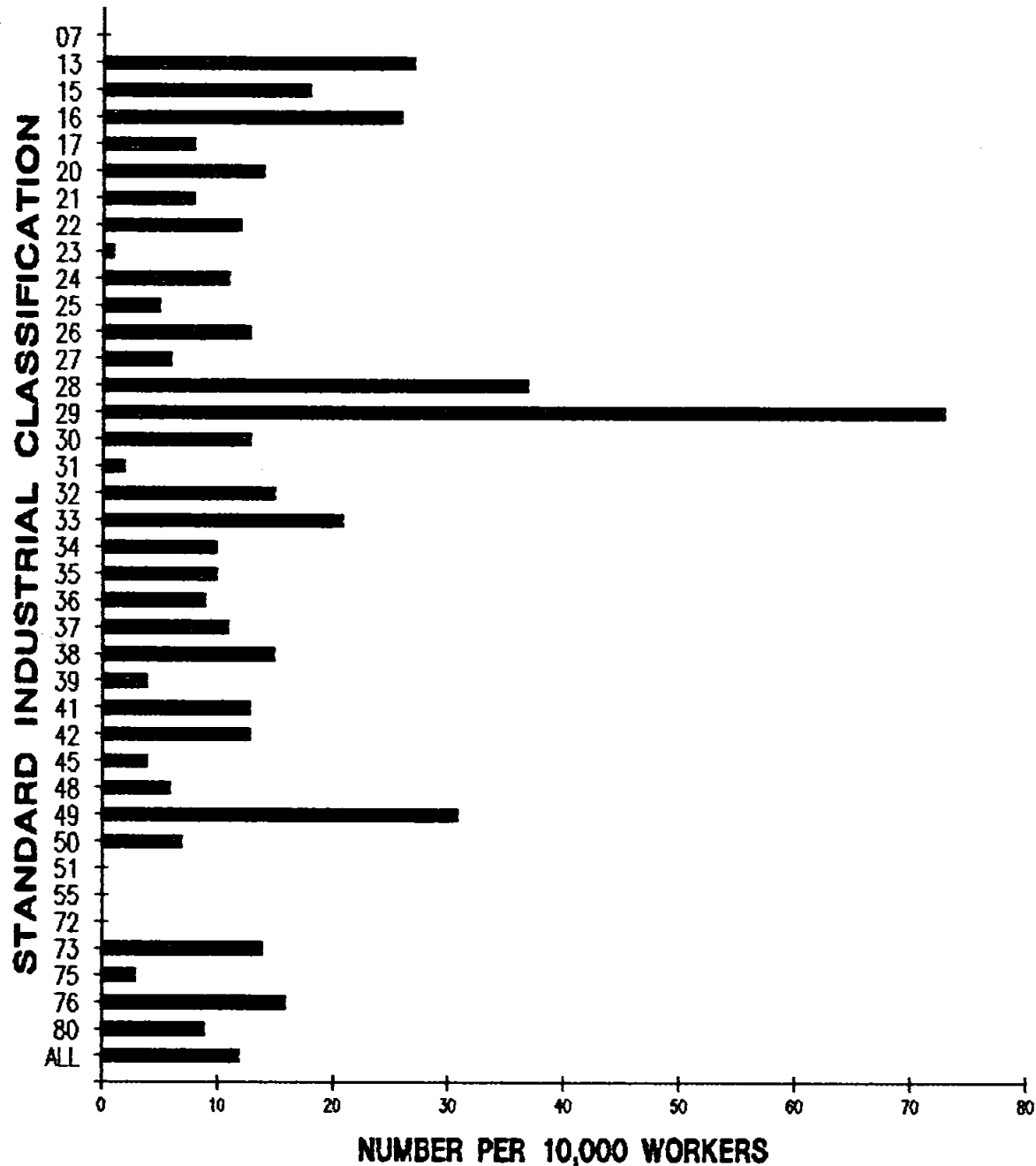
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-9

## ESTIMATED NUMBER OF OCCUPATIONAL HEALTH AND SAFETY PROFESSIONALS EMPLOYED PER 10,000 WORKERS

MAJOR GROUP	OCCUPATIONAL HEALTH PROFESSIONALS				OCCUPATIONAL SAFETY PROFESSIONALS			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	ALL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	ALL
07	...	...	...	...	...	...	...	...
13	...	2* (2)	...	1* (1)	14* (10)	42* (15)	15* (10)	26* (7)
15-17	<1	<1	1* (2)	<1	14 (3)	15* (6)	12 (2)	14 (2)
20-39	1* (≥.25)	2* (1)	4 (<.5)	3 (<.5)	8 (2)	11 (1)	10 (1)	10 (1)
40-49	5* (4)	3* (2)	2* (1)	3* (2)	12* (5)	15* (4)	8* (3)	12* (3)
50-59	...	2* (1)	...	<1	6* (4)	9* (5)	...	7* (2)
70-79	...	5* (2)	11* (5)	3* (1)	3* (1)	8* (3)	18* (7)	6* (2)
80	5* (6)	7* (3)	3 (<.5)	4 (1)	5* (6)	9* (3)	4 (<.5)	5 (1)
ALL	1* (1)	2 (1)	4 (<.5)	2 (<.5)	9 (1)	12 (1)	9 (1)	10 (1)

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE IV - 12**  
**ESTIMATED NUMBER OF OCCUPATIONAL HEALTH OR**  
**SAFETY PERSONNEL EMPLOYED PER 10,000 WORKERS**  
**(NOES 1981-1983)**



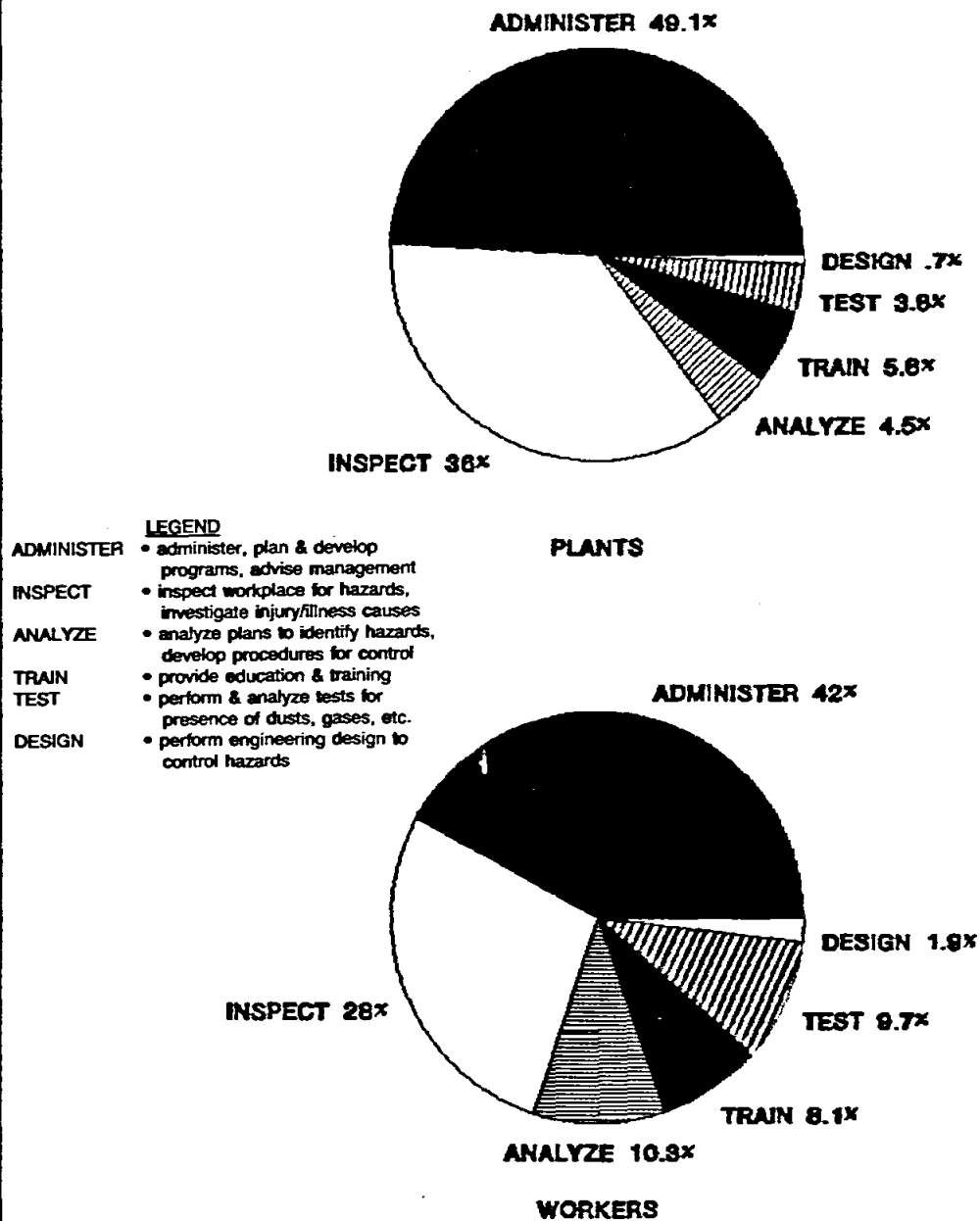
## ESTIMATED NUMBER OF OCCUPATIONAL HEALTH AND SAFETY PROFESSIONALS EMPLOYED PER 10,000 WORKERS

SIC CODE	OCCUPATIONAL HEALTH PROFESSIONALS				OCCUPATIONAL SAFETY PROFESSIONALS			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	ALL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	ALL
07	...	...	...	...	...	...	...	...
13	...	2* (2)	...	1* (1)	14* (10)	42* (15)	15* (10)	26* (7)
15	...	1* (1)	<1	<1	20* (10)	18* (16)	11 (3)	18* (6)
16	...	...	3* (4)	1* (1)	25* (9)	30* (12)	14 (2)	25* (7)
17	<1	...	...	<1	9* (3)	3* (2)	...	8* (3)
20	...	<1	1* (1)	1* (≥.25)	19* (10)	13* (4)	8* (2)	13 (3)
21	...	...	4* (8)	4* (7)	23* (70)	...	3* (7)	4* (7)
22	...	5* (3)	6* (7)	5* (4)	...	9* (4)	8* (4)	7* (3)
23	...	...	1* (1)	<1	1* (1)	<1	4* (2)	1* (1)
24	3* (4)	1* (1)	...	2* (2)	3* (4)	22* (8)	5* (10)	9* (3)
25	...	1* (1)	1* (2)	1* (1)	...	2* (2)	11 (2)	4* (1)
26	...	...	5* (4)	2* (1)	17* (8)	5* (2)	15 (3)	11* (3)
27	...	...	3* (2)	1* (1)	4* (3)	7* (6)	4 (1)	5* (2)
28	12* (9)	19* (10)	10* (3)	13* (3)	14* (7)	29* (7)	24 (5)	24 (5)
29	...	4* (6)	15* (7)	9* (5)	36* (45)	70 (7)	70* (25)	64 (16)
30	...	...	5* (3)	1* (1)	9* (5)	12* (4)	14* (5)	12* (3)
31	...	...	...	...	...	3* (5)	...	2* (4)
32	...	3* (3)	2* (9)	2* (2)	9* (4)	17* (5)	13* (12)	13* (3)
33	...	7* (6)	6 (1)	6* (2)	21* (11)	19* (6)	12 (1)	15 (2)

SIC CODE	OCCUPATIONAL HEALTH PROFESSIONALS				OCCUPATIONAL SAFETY PROFESSIONALS			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	ALL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	ALL
34	1* (1)	1* (1)	3* (1)	1* (≥.25)	10* (5)	9 (2)	9 (1)	9 (2)
35	...	2* (1)	3* (1)	2* (<.5)	1* (1)	12* (3)	9 (1)	8 (1)
36	2* (2)	1* (≥.25)	3* (1)	2* (1)	4* (4)	10* (3)	6 (1)	7 (1)
37	...	...	2 (1)	2 (<.5)	43* (22)	9* (4)	7 (1)	9 (2)
38	...	2* (2)	10* (8)	7* (5)	5* (5)	6* (3)	10* (3)	8 (2)
39	...	...	3* (12)	1* (1)	...	5* (3)	4* (11)	3* (2)
41	...	...	...	...	...	32* (15)	...	13* (8)
42	...	...	...	...	17* (10)	7* (4)	3* (2)	13* (6)
45	...	...	1* (≥.25)	<1	...	11* (11)	3* (1)	4* (2)
48	...	...	6* (8)	1* (1)	...	15* (11)	11* (8)	5* (3)
49	25* (18)	7* (7)	3* (2)	12* (6)	30* (20)	12* (8)	18* (9)	19* (8)
50	...	2* (1)	...	<1	6* (4)	9* (5)	...	7* (2)
51	...	...	...	...	...	...	...	...
55	...	...	...	...	...	...	...	...
72	...	...	...	...	...	...	...	...
73	...	5* (3)	11* (5)	5* (2)	2* (2)	9* (4)	18* (7)	9* (3)
75	...	...	...	...	3* (3)	...	...	3* (3)
76	...	30* (25)	...	4* (4)	11* (11)	15* (12)	...	12* (10)
80	5* (6)	7* (3)	3 (<.5)	4 (1)	5* (6)	9* (3)	4 (<.5)	5 (1)
ALL	1* (1)	2 (1)	4 (<.5)	2 (<.5)	9 (1)	12 (1)	9 (1)	10 (1)

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE IV - 13**  
**OCCUPATIONAL SAFETY AND HEALTH ACTIVITIES IN PLANTS**  
**EMPLOYING SPECIALISTS BY PLANTS AND WORKERS**  
**(NOES 1981-1983)**



NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-11

NUMBER AND PERCENT OF PLANTS BY OCCUPATIONAL  
HEALTH AND SAFETY ACTIVITY

MAJOR GROUP	ADMINISTER	INSPECT	ANALYZE	TRAIN	TEST	DESIGN
07	...	...	...	...	...	...
13	765* (247) 7.9%	192* (91) 2.0%	40* (31) .4%	...	...	...
15-17	1623 (344) 1.6%	2089* (567) 2.1%	78* (44) .1%	99* (69) .1%	44* (40) .0%	39* (39) .0%
20-39	9184 (836) 4.8%	5547 (597) 2.9%	983 (199) .5%	1022 (209) .5%	1024 (205) .5%	145* (47) .1%
40-49	2149* (763) 3.6%	1498* (631) 2.5%	86* (73) .1%	307* (107) .5%	10* (4) .0%	...
50-59	331* (202) .5%	724* (329) 1.2%	...	...	...	...
70-79	415* (121) .5%	462* (194) .6%	67* (49) .1%	240* (207) .3%	89* (59) .1%	7* (7) .0%
80	1070 (206) 15.1%	886 (190) 12.5%	178* (53) 2.5%	166* (48) 2.3%	51* (33) .7%	38* (20) .5%
ALL	15536 (1249) 3.1%	11398 (1125) 2.2%	1431 (230) .3%	1834 (324) .4%	1218 (220) .2%	230* (64) .0%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
...No facilities observed.

## NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-12

NUMBER AND PERCENT OF PLANTS BY OCCUPATIONAL  
HEALTH AND SAFETY ACTIVITY

SIC CODE	ADMINISTER	INSPECT	ANALYZE	TRAIN	TEST	DESIGN
07	...	...	...	...	...	...
13	765* (247) 7.9%	192* (91) 2.0%	40* (31) .4%	...	...	...
15	494* (252) 1.9%	845* (416) 3.2%	12* (13) .0%	12* (13) .0%	5* (5) .0%	...
16	775* (199) 6.2%	449* (258) 3.6%	58* (43) .5%	87* (67) .7%	39* (39) .3%	39* (39) .3%
17	354* (189) .6%	795* (303) 1.3%	8* (10) .0%	...	...	...
20	1318* (404) 8.7%	401* (166) 2.6%	50* (31) .3%	192* (128) 1.3%	43* (62) .3%	...
21	12* (8) 10.8%	7* (11) 6.8%	...	3* (4) 3.0%	11* (11) 9.8%	...
22	318* (108) 6.6%	205* (127) 4.2%	...	26* (20) .5%	104* (97) 2.2%	...
23	98* (81) .6%	...	...	11* (8) .1%	47* (41) .3%	...
24	283* (134) 2.4%	150* (83) 1.3%	52* (48) .4%	...	...	...
25	148* (85) 2.8%	51* (35) 1.0%	...	11* (23) .2%	3* (4) .1%	...
26	316* (118) 5.4%	281* (120) 4.8%	7* (6) .1%	22* (25) .4%	33* (26) .6%	...
27	304* (133) 1.5%	117* (60) .6%	...	54* (40) .3%	4* (4) .0%	...
28	1023* (283) 13.3%	577 (85) 7.5%	144* (48) 1.9%	238* (108) 3.1%	120* (64) 1.6%	12* (6) .2%
29	414* (190) 29.5%	324* (118) 23.0%	31* (22) 2.2%	26* (35) 1.9%	7* (8) .5%	...
30	641* (183) 7.6%	180* (93) 2.1%	67* (59) .8%	80* (68) .9%	18* (34) .2%	3* (5) .0%
31	...	36* (55) 2.3%	...	...	...	...
32	307* (99) 3.1%	276* (144) 2.8%	49* (49) .5%	26* (39) .3%	128* (66) 1.3%	...
33	839 (178) 14.1%	402* (115) 6.8%	151* (66) 2.5%	16* (7) .3%	184* (111) 3.1%	49* (31) .8%



SIC CODE	ADMINISTER	INSPECT	ANALYZE	TRAIN	TEST	DESIGN
34	639 (133) 2.9%	637* (207) 2.9%	6* (8) .0%	...	...	31* (30) .1%
35	723 (153) 2.7%	693* (181) 2.6%	107* (92) .4%	49* (38) .2%	38* (14) .1%	11* (6) .0%
36	662 (159) 6.3%	524* (136) 5.0%	80* (38) .8%	119* (57) 1.1%	91* (30) .9%	25* (20) .2%
37	762* (268) 13.7%	409* (115) 7.3%	138* (84) 2.5%	59* (34) 1.1%	98* (33) 1.8%	14* (11) .3%
38	278* (93) 6.8%	252* (117) 6.2%	102* (76) 2.5%	80* (80) 2.0%	95* (79) 2.3%	...
39	99* (102) 1.3%	24* (39) .3%	...	10* (10) .1%	...	...
41	83* (125) 1.7%	...	...	180* (66) 3.7%	...	...
42	373* (169) 1.7%	395* (295) 1.8%	...	...	...	...
45	155* (115) 3.9%	30* (19) .8%	...	3* (4) .1%	6 (1) .2%	...
48	299* (158) 1.9%	3* (4) .0%	...	19* (16) .1%	3* (4) .0%	...
49	1181* (601) 11.5%	1015* (520) 9.9%	...	104* (77) 1.0%	...	...
50	331* (202) 1.0%	724* (329) 2.3%	...	...	...	...
51	...	...	...	...	...	...
55	...	...	...	...	...	...
72	...	...	...	...	...	...
73	378* (129) 2.1%	312* (154) 1.7%	67* (49) .4%	...	89* (59) .5%	7* (7) .0%
75	...	114* (116) .4%	...	...	...	...
76	36* (45) .4%	36* (45) .4%	...	240* (207) 2.4%	...	...
80	1070 (206) 15.1%	886 (190) 12.5%	178* (53) 2.5%	166* (48) 2.3%	51* (33) .7%	38* (20) .5%
All	15494 (1185) 3.1%	11344 (1087) 2.2%	1345 (251) .3%	1834 (257) .4%	1218 (239) .2%	230 (75) .0%

\*Standard error &gt;25% of the estimate. The estimate may be unreliable.

...No facilities observed.

NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-13

NUMBER AND PERCENT OF WORKERS IN PLANTS BY  
OCCUPATIONAL HEALTH AND SAFETY ACTIVITY

MAJOR GROUP	ADMINISTER	INSPECT	ANALYZE	TRAIN	TEST	DESIGN
07	...	...	...	...	...	...
13	143949* (60122) 34.7%	29473* (17190) 7.1%	15189* (11898) 3.7%	...	...	...
15-17	307609* (90998) 10.0%	194091* (49415) 6.3%	38239* (28830) 1.2%	34044* (25441) 1.1%	25650* (22479) .8%	5493* (5493) .2%
20-39	6744527 (263322) 35.0%	4524837 (231185) 23.5%	1937006 (252029) 10.1%	1417154 (110336) 7.4%	1924078 (205100) 10.0%	315496 (76253) 1.6%
40-49	668274 (144036) 21.1%	329914* (86387) 10.4%	12886* (11008) .4%	128440* (51922) 4.1%	66880* (26964) 2.1%	...
50-59	52413* (41826) 3.4%	46860 (11205) 3.1%	...	...	...	...
70-79	269868* (87722) 12.3%	224128* (97805) 10.2%	57158* (39064) 2.6%	20633* (17170) .9%	74069* (61667) 3.4%	28160* (30155) 1.3%
80	1558959 (297525) 42.6%	1160493 (265104) 31.7%	324791* (103706) 8.9%	289691* (84769) 7.9%	152390* (65600) 4.2%	97650* (47473) 2.7%
ALL	9745599 (447153) 29.2%	6509796 (378970) 19.5%	2385269 (277296) 7.1%	1889962 (151650) 5.7%	2243067 (226726) 6.7%	446800 (94909) 1.3%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
...No facilities observed.



NUMBER AND PERCENT OF WORKERS IN PLANTS BY  
OCCUPATIONAL HEALTH AND SAFETY ACTIVITY

SIC CODE	ADMINISTER	INSPECT	ANALYZE	TRAIN	TEST	DESIGN
07	...	...	...	...	...	...
13	143949* (60122) 34.7%	29473* (17190) 7.1%	15189* (11898) 3.7%	...	...	...
15	126308* (65553) 14.1%	76779* (20432) 8.6%	22497* (23969) 2.5%	22497* (23969) 2.5%	20157* (21701) 2.2%	...
16	130804* (42943) 22.1%	81964* (33021) 13.8%	15184* (16175) 2.6%	11547* (8829) 1.9%	5493* (5493) .9%	5493* (5493) .9%
17	50497* (20469) 3.2%	35348* (15665) 2.2%	557* (729) .0%	...	...	...
20	418845 (78906) 27.0%	121263* (42364) 7.8%	84025* (55927) 5.4%	57487* (38942) 3.7%	16299* (23480) 1.0%	...
21	16277* (23396) 14.3%	16019* (23625) 14.1%	...	25744* (28069) 22.6%	41763* (36135) 36.6%	...
22	183117* (75612) 25.6%	131428* (71166) 18.4%	...	51838* (46218) 7.3%	55658* (54892) 7.8%	...
23	54922* (41071) 4.4%	...	...	29565* (21706) 2.4%	47062* (40984) 3.8%	...
24	42721* (19539) 7.4%	53348* (25881) 9.2%	6303* (5828) 1.1%	...	...	...
25	125510* (59995) 24.2%	44538* (30525) 8.6%	...	12715* (26486) 2.5%	20917* (22806) 4.0%	...
26	209665* (66663) 33.5%	93340* (49645) 14.9%	7945* (7094) 1.3%	29057* (34062) 4.6%	69297* (50676) 11.1%	...
27	187084* (54350) 15.8%	27827* (17840) 2.3%	...	31835* (22817) 2.7%	20626* (18958) 1.7%	...
28	538479 (134008) 58.7%	379975 (81271) 41.4%	216742* (79880) 23.6%	166196* (83062) 18.1%	225562* (116294) 24.6%	50146* (19444) 5.5%
29	164461* (80738) 74.2%	147885* (72192) 66.7%	30989* (21236) 14.0%	4750* (6386) 2.1%	25411* (31007) 11.5%	...
30	263899* (85798) 35.0%	106363* (64510) 14.1%	79175* (63124) 10.5%	75768* (67114) 10.1%	8859* (20524) 1.2%	2952* (5934) .4%
31	...	6307* (9640) 3.6%	...	...	...	...
32	97223* (43173) 16.9%	54490* (26025) 9.5%	2214* (2214) .4%	16610* (32581) 2.9%	47828* (26047) 8.3%	...
33	698093 (80430) 65.2%	503115 (73329) 47.0%	197651 (68752) 18.5%	69080* (28155) 6.4%	118764* (29946) 11.1%	79942* (45324) 7.5%

SIC CODE	ADMINISTER	INSPECT	ANALYZE	TRAIN	TEST	DESIGN
34	279693* (95256) 18.6%	248961* (110642) 16.6%	13819* (18588) .9%	...	...	4582* (4544) .3%
35	746622 (138650) 31.4%	601187 (125790) 25.3%	142692* (47928) 6.0%	114128* (75427) 4.8%	176449* (61063) 7.4%	35106* (9668) 1.5%
36	893808 (159889) 45.5%	557661 (136973) 28.4%	322170* (126157) 16.4%	274560* (77699) 14.0%	299703* (102885) 15.2%	44306* (27707) 2.3%
37	1464840 (247214) 77.9%	1204026 (172157) 64.0%	642028 (149098) 34.1%	322720* (173560) 17.2%	564821 (122827) 30.0%	98462* (44623) 5.2%
38	298671* (110395) 39.3%	205623* (111974) 27.1%	191254* (118169) 25.2%	115634* (115634) 15.2%	185058* (120050) 24.4%	...
39	60597* (40830) 11.5%	21479* (19540) 4.1%	...	19466* (18968) 3.7%	...	...
41	22938* (34259) 11.5%	...	...	34456* (26114) 17.3%	...	...
42	72749* (45942) 8.9%	28570* (22954) 3.5%	...	...	...	...
45	189673* (79288) 42.0%	85156* (54685) 18.9%	...	13752* (14653) 3.0%	53654* (37992) 11.9%	...
48	114585* (51978) 17.0%	13226* (14092) 2.0%	...	37029* (29526) 5.5%	13226* (14092) 2.0%	...
49	238540* (88745) 28.4%	183553* (57433) 21.8%	...	43203* (32582) 5.1%	...	...
50	52413* (41826) 5.7%	46860 (11205) 5.1%	...	...	...	...
51	...	...	...	...	...	...
55	...	...	...	...	...	...
72	...	...	...	...	...	...
73	257195* (90859) 23.4%	206447* (100042) 18.8%	57158* (39064) 5.2%	...	74069* (61667) 6.7%	28160* (30155) 2.6%
75	...	5008* (5094) 1.2%	...	...	...	...
76	12672* (15755) 6.2%	12672* (15755) 6.2%	...	20633* (17170) 10.2%	...	...
80	1558959 (297525) 42.6%	1160493 (265104) 31.7%	324791* (103706) 8.9%	289691* (84769) 7.9%	152390* (65600) 4.2%	97650* (47473) 2.7%
All	9724815 (411276) 29.2%	6490387 (326025) 19.5%	2372383 (291391) 7.1%	1889962 (177851) 5.7%	2243067 (226115) 6.7%	446800 (84208) 1.3%

\*Standard error &gt;25% of the estimate. The estimate may be unreliable.

...No facilities observed.

**NOES QUESTIONNAIRE ITEM NO. 30**  
**Use of Industrial Hygiene Consultation Services**

**Intent**

The intent of this question was to determine whether a facility received industrial hygiene consulting services from an outside source during the previous year.

This item was displayed on the questionnaire as:

30. Has your facility received industrial hygiene services on a consulting basis during the past 12 months?

- 1 Yes, from government sources
- 2 Yes, from non-government sources
- 3 No

**Notes**

Industrial hygiene consulting service from an outside source is defined as the provision of advice, consultation, or service obtained from persons not employed by the facility which were provided for reasons other than enforcement of regulatory health standards.

Consultations or visits by federal, state or local officials, by corporate headquarters personnel, or by insurance company specialists were acceptable if the intent was to provide industrial hygiene services and not to enforce legal regulatory standards.

All consultations not conducted on behalf of the facility or corporate management, such as regulatory visits or union-initiated studies, were excluded.

**Analysis**

Two analyses of the responses to question 30 are presented.

- (1) Responses 30.1 and 30.2 - Industrial hygiene consultations received from government and non-government sources

The estimates of the plants which have received industrial hygiene consultations during the preceding year from government or non-government sources, and workers in those plants (by number and proportion of the total) are displayed in Figures IV-14 and IV-15, and Tables IV-15 and IV-16.

Figure IV-14	Industrial hygiene consultation in last year (by major industrial group)
Figure IV-15	Industrial hygiene consultation in last year (by 2-digit SIC)
Table IV-15	Number and percent of plants and employees in plants which received industrial hygiene consultation during the past year (by major industrial group)

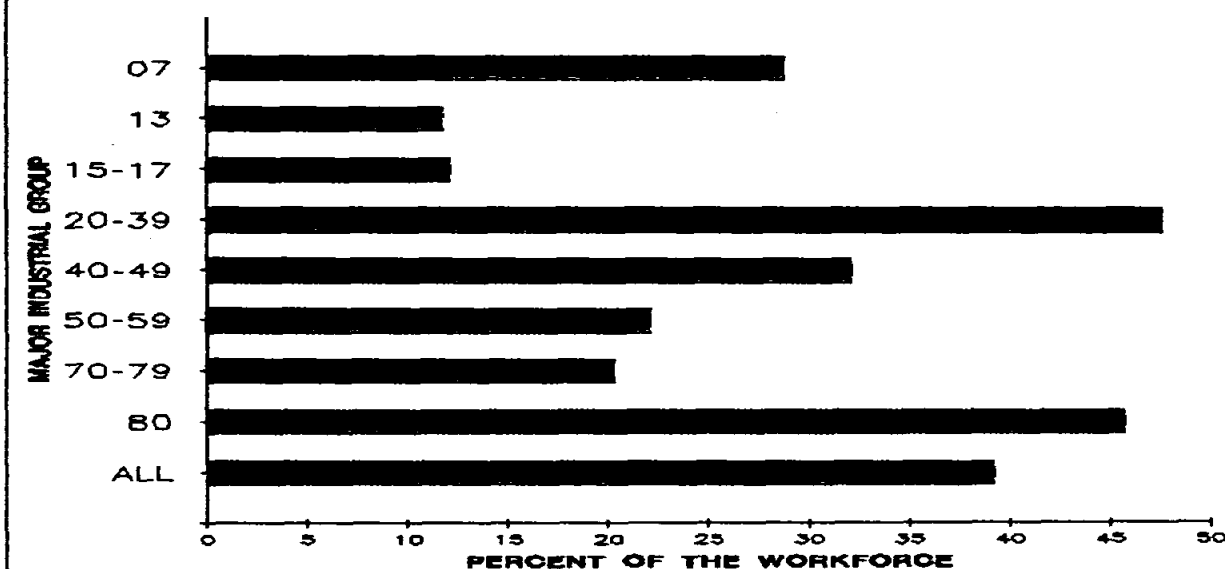
**Table IV-16**            **Number and percent of plants and employees in plants which received industrial hygiene consultation during the past year (by 2-digit SIC)**

- (2) Responses 30.1, 30.2 or 30.3 - Plants receiving industrial hygiene consultation in the past year from government or non-government sources, or not receiving industrial hygiene consultation.

The estimates of the proportion of plants (by size category) which received industrial hygiene consultations in the past year from government sources (GOV'T), non-government sources (NON-GOV'T), or which did not receive such consultation (NONE) are displayed in Figure IV-16.

**Figure IV-16**            **Plants receiving industrial hygiene consultation by source**

**FIGURE IV - 14**  
**INDUSTRIAL HYGIENE CONSULTATION IN LAST YEAR**  
**(NOES 1981-1983)**



NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-15

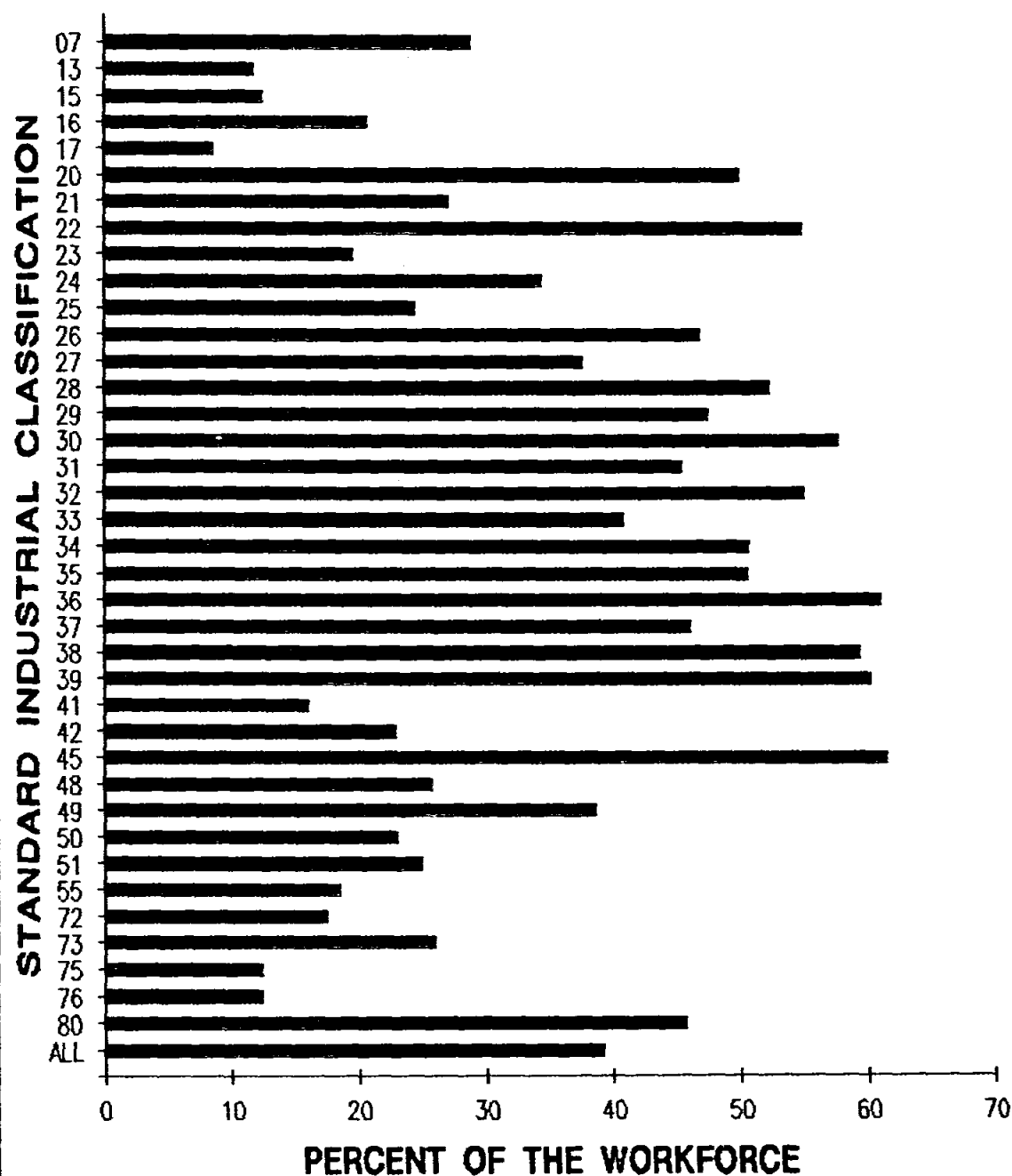
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 RECEIVED INDUSTRIAL HYGIENE CONSULTATION DURING THE PAST YEAR

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	1179* (563) 21.2%	70* (67) 100.0%	...	1249* (553) 22.2%	24945* (14547) 24.1%	7009* (6680) 100.0%	...	31954* (15011) 28.9%
13	991* (558) 11.5%	214* (171) 21.0%	...	1204* (562) 12.5%	14324* (7654) 6.9%	35006* (21376) 20.1%	...	49330* (21576) 11.9%
15-17	6281 (1281) 6.7%	742* (195) 17.9%	37* (30) 15.3%	7059 (1278) 7.2%	173611 (35232) 8.3%	154663* (44206) 21.0%	46664* (24085) 19.8%	374939 (56345) 12.2%
20-39	29787 (1917) 19.4%	15847 (1335) 49.9%	3885 (330) 62.0%	49519 (2272) 25.9%	1192697 (60376) 25.8%	3298352 (286684) 51.7%	4687730 (346159) 56.7%	9178779 (441335) 47.7%
40-49	7543 (1752) 14.2%	1961* (544) 33.6%	268* (99) 57.2%	9772 (1525) 16.4%	245617 (54098) 17.1%	383527 (91116) 33.3%	389043 (93838) 67.8%	1018188 (126748) 32.2%
50-59	7897 (1529) 13.5%	878* (339) 33.0%	...	8776 (1437) 14.4%	194056 (41478) 17.3%	146499* (57044) 35.8%	...	340556 (62785) 22.2%
70-79	6349* (1958) 8.7%	653 (153) 27.9%	105* (56) 29.7%	7108* (1965) 9.4%	171537* (51937) 12.3%	148517 (36912) 32.0%	128798* (58406) 37.9%	448852 (85238) 20.4%
80	869* (447) 30.6%	1031 (198) 47.6%	1023 (181) 49.6%	2922 (491) 41.4%	38448* (17992) 37.8%	251948 (49374) 47.1%	1383656 (201449) 45.8%	1674052 (192353) 45.8%
ALL	60895 (3923) 13.6%	21397 (1526) 42.8%	5318 (394) 56.3%	87610 (3989) 17.2%	2055236 (113248) 18.5%	4425522 (316227) 44.9%	6635891 (416179) 53.2%	13116649 (512752) 39.3%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.



**FIGURE IV - 15**  
**INDUSTRIAL HYGIENE CONSULTATION IN LAST YEAR**  
**(NOES 1981-1983)**



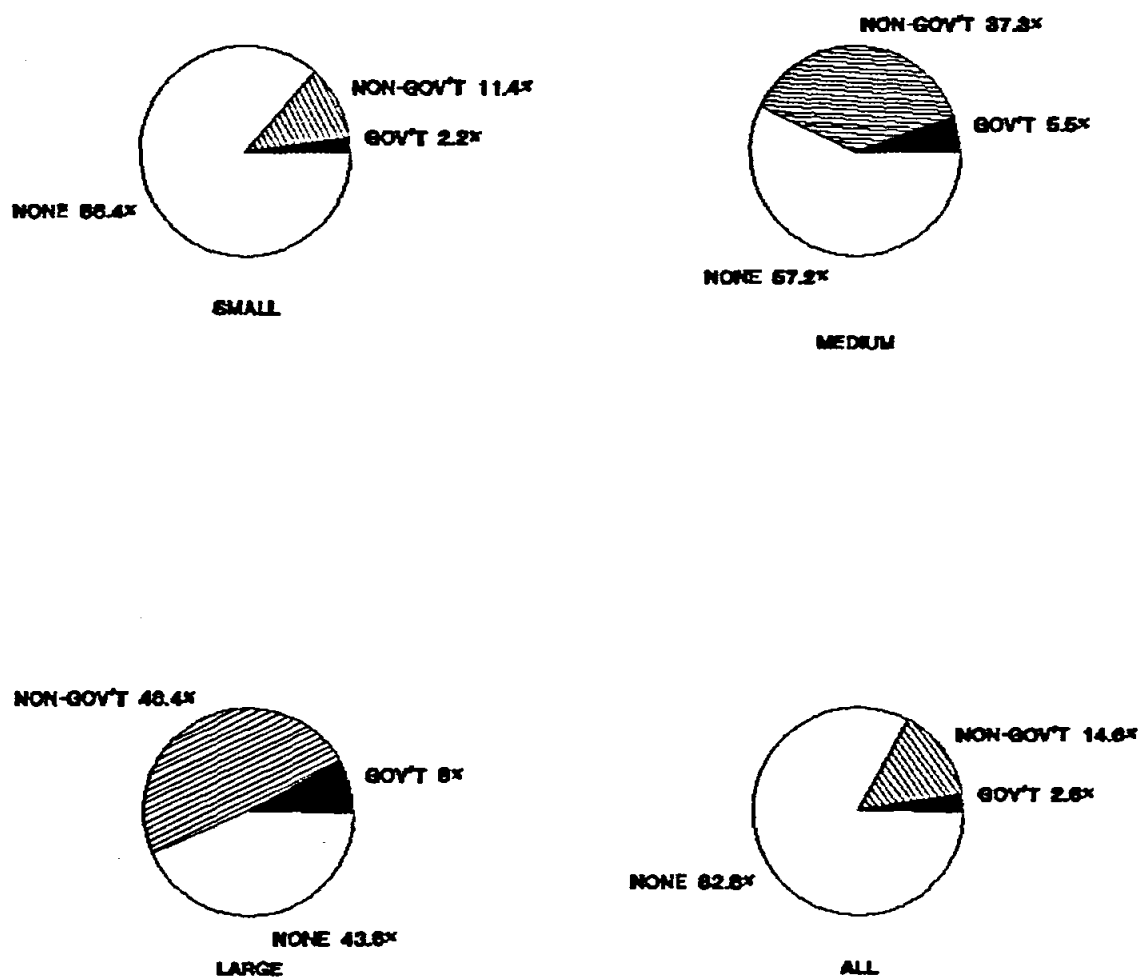
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
RECEIVED INDUSTRIAL HYGIENE CONSULTATION DURING THE PAST YEAR

SIC CODE	PLANTS			TOTAL	EMPLOYEES			TOTAL
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)		SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	
07	1179* (563) 21.2%	70* (67) 100.0%	...	1249* (553) 22.2%	24945* (14547) 24.1%	7009* (6680) 100.0%	...	31954* (15011) 28.9%
13	991* (558) 11.5%	214* (171) 21.0%	...	1204* (562) 12.5%	14324* (7654) 6.9%	35006* (21376) 20.1%	...	49330* (21576) 11.9%
15	1429* (553) 5.7%	167* (84) 15.1%	20* (18) 14.7%	1616* (539) 6.2%	49434* (17794) 8.8%	37900* (23840) 19.1%	25647* (18373) 19.0%	112981* (31712) 12.6%
16	1424* (435) 12.6%	339* (189) 30.3%	17* (28) 15.9%	1780* (542) 14.2%	43652* (14416) 15.4%	58573* (38147) 28.2%	21017* (21480) 20.8%	123241* (49050) 20.8%
17	3428* (981) 5.9%	236* (144) 12.3%	...	3664* (1020) 6.1%	80525* (21288) 6.4%	58191* (33125) 17.6%	...	138716* (44002) 8.8%
20	3283 (648) 28.8%	1849 (303) 57.5%	272* (99) 48.6%	5404 (781) 35.6%	122972 (19568) 31.7%	429923 (74103) 63.8%	224301* (66896) 45.6%	777197 (78024) 50.0%
21	30* (43) 100.0%	...	10* (19) 12.2%	40* (45) 36.6%	1866* (2685) 100.0%	...	29132* (29367) 26.0%	30998* (28820) 27.2%
22	186* (100) 6.4%	877 (169) 55.2%	203* (69) 68.0%	1267 (169) 26.3%	8092* (5323) 7.6%	198415 (41864) 57.2%	186252* (78950) 71.3%	392759 (73153) 55.0%
23	1501* (557) 12.0%	830 (190) 26.7%	73* (47) 30.3%	2404 (558) 15.2%	53894* (14487) 12.7%	146667* (44058) 24.0%	44124* (30217) 21.2%	244685 (44375) 19.7%
24	1743 (427) 16.3%	641* (207) 55.9%	7* (8) 6.6%	2391 (433) 20.0%	92706 (22911) 30.5%	98845* (30001) 53.8%	8146* (9007) 8.8%	199697 (42801) 34.5%
25	750* (379) 18.0%	280* (195) 26.3%	29* (25) 24.0%	1058* (453) 19.8%	28824* (13259) 20.7%	70777* (50190) 27.6%	28020* (27305) 22.8%	127622* (59002) 24.6%
26	997* (354) 24.2%	768* (216) 48.9%	107* (60) 49.9%	1872 (346) 31.7%	56004* (17375) 40.7%	154660* (42428) 54.9%	83804* (44248) 40.5%	294468 (66790) 47.0%
27	2756 (578) 15.2%	582* (187) 31.1%	185* (88) 58.4%	3523 (662) 17.3%	108428 (19102) 22.7%	145567* (48992) 40.3%	192719* (64317) 55.7%	446715 (97647) 37.7%
28	1963 (393) 31.8%	684 (149) 58.9%	239* (96) 62.8%	2885 (404) 37.4%	67526 (11457) 37.4%	135169* (39629) 51.8%	278183* (135524) 58.4%	480878* (132688) 52.4%
29	...	230* (122) 78.3%	38* (23) 37.4%	267* (129) 19.0%	...	49143* (19726) 77.7%	56400* (35813) 48.0%	105543* (46416) 47.6%
30	2448 (587) 36.5%	795 (173) 51.7%	180* (75) 80.6%	3424 (652) 40.4%	88350 (16079) 39.3%	169731* (42735) 57.6%	177483* (72539) 76.0%	435564 (81591) 57.8%
31	320* (207) 34.4%	298* (118) 52.4%	3* (10) 14.0%	622* (274) 40.8%	9466* (5547) 38.0%	66556* (27345) 49.1%	4015* (11440) 25.6%	80036* (31675) 45.5%
32	2142* (594) 24.3%	599 (123) 59.2%	136* (66) 74.1%	2878 (604) 28.8%	88628 (20101) 37.4%	139261 (34195) 66.6%	89560* (41865) 69.4%	317449 (48912) 55.2%
33	1174 (289) 28.4%	755* (205) 51.4%	148* (44) 43.9%	2077 (369) 35.0%	51350 (12153) 37.1%	167263 (35233) 53.8%	220042* (73742) 35.4%	438656 (83176) 41.0%

SIC CODE					EMPLOYEES			
	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	3668 (507) 19.8%	1698 (192) 54.4%	268* (80) 77.4%	5634 (547) 25.6%	154906 (18845) 27.9%	351244 (41104) 58.9%	257238* (89349) 73.3%	763389 (102783) 50.8%
35	2800 (540) 12.4%	1839 (226) 54.0%	525 (68) 67.0%	5165 (582) 19.2%	118736 (19581) 19.6%	357136 (45432) 54.0%	730906 (119656) 65.7%	1206778 (126591) 50.7%
36	1750* (496) 24.6%	1452 (233) 54.1%	577* (152) 73.3%	3779 (638) 35.7%	70192 (14340) 30.5%	292194 (58439) 52.9%	838144 (166852) 70.9%	1200530 (195731) 61.1%
37	611* (343) 15.4%	755 (179) 63.4%	221 (54) 53.2%	1587* (398) 28.4%	14482* (7118) 11.4%	151964 (35098) 63.5%	701364 (108444) 46.3%	867809 (98848) 46.2%
38	3C 1* (203) 11.3%	498* (158) 52.0%	337* (129) 80.9%	1138* (300) 28.0%	11513* (6321) 11.0%	92310* (32898) 47.5%	347992* (116370) 75.6%	451815* (121184) 59.5%
39	1361* (359) 20.8%	418* (768) 52.3%	328* (217) 97.0%	2106* (835) 27.4%	44760* (11705) 27.0%	81528* (141727) 54.6%	189904* (119941) 90.7%	316191* (137676) 60.3%
41	264* (235) 6.0%	83* (125) 16.4%	...	347* (282) 7.0%	9094* (7421) 7.7%	22938* (34259) 28.1%	...	32032* (35913) 16.1%
42	3043* (976) 15.2%	420* (174) 28.3%	30* (27) 36.1%	3493* (956) 16.2%	96343* (24455) 19.8%	69091* (24064) 26.7%	23769* (21599) 31.8%	189204 (36906) 23.0%
45	646* (336) 19.9%	341* (305) 57.7%	131* (58) 89.2%	1118* (445) 28.1%	17816* (12088) 23.0%	45987* (41201) 42.1%	214189* (78978) 81.1%	277992* (86300) 61.6%
48	1843* (1064) 12.5%	341* (198) 37.8%	18* (13) 52.4%	2202* (1059) 14.1%	70014* (47356) 16.4%	58101* (32155) 33.0%	46280* (33466) 66.0%	174395* (62830) 25.9%
49	1109* (624) 13.5%	749* (292) 40.2%	89* (74) 51.5%	1947* (665) 19.0%	40838* (22603) 15.2%	179780* (71844) 42.3%	104805* (55062) 71.5%	325423* (98112) 38.7%
50	3317* (1152) 10.9%	642* (251) 35.6%	...	3959* (1173) 12.3%	91831* (32782) 14.6%	119487* (52238) 42.2%	...	211317* (62816) 23.1%
51	1380* (642) 15.1%	237* (237) 100.0%	...	1617* (740) 17.3%	26202* (11523) 14.2%	27013* (27013) 100.0%	...	53214* (32915) 25.1%
55	3200* (1191) 16.9%	...	...	3200* (1191) 16.4%	76024* (31625) 24.6%	...	...	76024* (31625) 18.7%
72	1552* (674) 7.5%	167* (90) 24.8%	13* (19) 100.0%	1733* (655) 8.1%	48429* (21089) 12.7%	24271* (15228) 29.5%	10670* (15114) 100.0%	83370* (27737) 17.6%
73	1320* (737) 8.0%	450* (123) 30.2%	92* (43) 26.9%	1862* (187) 10.1%	57491* (30853) 13.6%	111574* (29787) 31.9%	118127* (51883) 35.9%	287192 (68605) 26.1%
75	2613* (1214) 10.0%	...	...	2613* (1214) 10.0%	52842* (23998) 12.8%	...	...	52842* (23998) 12.5%
76	864* (747) 8.9%	36* (45) 29.4%	...	900* (751) 9.1%	12775* (10479) 7.2%	12672* (15755) 52.1%	...	25448* (19413) 12.5%
80	869* (447) 30.6%	1031 (198) 47.6%	1023 (181) 49.6%	2922 (491) 41.4%	38448* (17992) 37.8%	251948 (49374) 47.1%	1383656 (201449) 45.8%	1674052 (192353) 45.8%
A11	60258 (4615) 13.5%	21369 (1026) 43.1%	5318 (315) 56.4%	86945 (4970) 17.2%	2043724 (139903) 18.5%	4417891 (202660) 45.2%	6635891 (399517) 53.3%	13097506 (496514) 39.4%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE IV - 16**  
**PLANTS RECEIVING INDUSTRIAL HYGIENE**  
**CONSULTATION BY SOURCE**  
**(NOES 1981-1983)**



**NOES QUESTIONNAIRE ITEM NO. 31**  
**Use of Occupational Safety Consultation Services**

**Intent**

The intent of this question was to determine whether a facility received occupational safety consulting services from an outside source during the previous year.

This item was displayed on the questionnaire as:

31. Has your facility received occupational safety services on a consulting basis during the past months?

- 1 Yes, from government sources
- 2 Yes, from non-government sources
- 3 No

**Notes**

Occupational safety consultation services from an outside source is defined as the provision of occupational safety advice, consultation, or service obtained from persons not employed by the facility which were provided for reasons other than enforcement of regulatory safety standards.

All consultations not conducted on behalf of the facility or corporate management, such as regulatory visits or union-initiated studies, were excluded.

**Analysis**

Two analyses of the responses to question 31 are presented.

- (1) Responses 31.1 and 31.2 - Occupational safety consultations received from government and non-government sources.

The estimates of the plants which have received occupational safety consultations during the preceding year from government or non-government sources, and workers in those plants (by number and proportion of the total) are displayed in Figures IV-17 and IV-18, and Tables IV-17 and IV-18.

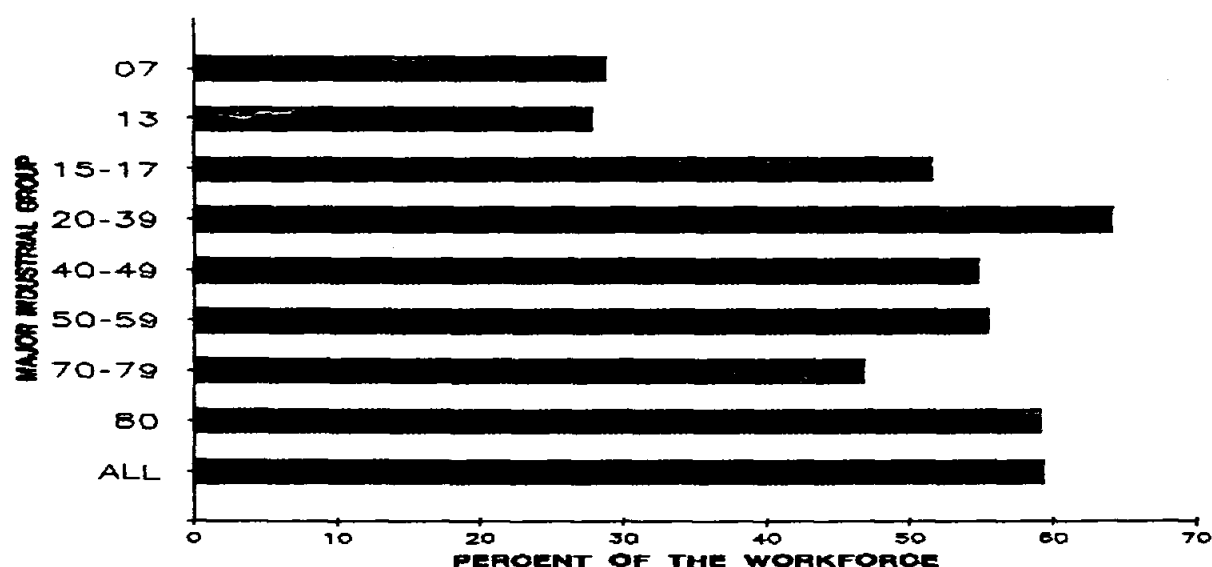
Figure IV-17	Occupational safety consultation in last year (by major industrial group)
Figure IV-18	Occupational safety consultation in the last year (by 2-digit SIC)
Table IV-17	Number and percent of plants and employees in plants which received occupational safety consultation during the past year (by major industrial group)
Table IV-18	Number and percent of plants and employees in plants which received occupational safety consultation during the past year (by 2-digit SIC)

- (2) Responses 31.1, 31.2, or 31.3 - Plants receiving occupational safety consultations in the past year from government or non-government sources, or not receiving occupational safety consultations

The estimates of the proportion of plants (by size category) which received occupational safety consultations in the past year from government sources (GOV'T), non-government sources (NON-GOV'T), or which did not receive such consultation (NONE) are displayed in Figure IV-19.

Figure IV-19      Plants receiving occupational safety consultation by source

**FIGURE IV - 17**  
**OCCUPATIONAL SAFETY CONSULTATION IN LAST YEAR**  
**(NOES 1981-1983)**



NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-17

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 RECEIVED OCCUPATIONAL SAFETY CONSULTATION IN THE LAST YEAR

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	1179* (563) 21.2%	70* (67) 100.0%	...	1249* (553) 22.2%	24945* (14547) 24.1%	7009* (6680) 100.0%	...	31954* (15011) 28.9%
13	3114* (1039) 36.2%	155* (78) 15.2%	...	3269* (1045) 33.8%	85404* (25550) 40.9%	30702* (15952) 17.7%	...	116106* (31252) 28.0%
15-17	37511 (2670) 39.8%	2755 (434) 66.5%	157* (107) 64.9%	40423 (2801) 40.9%	943646 (67007) 45.0%	504511 (83514) 68.4%	138887* (80536) 58.8%	1587043 (132539) 51.7%
20-39	76913 (3204) 50.2%	22645 (1894) 71.3%	4570 (308) 72.9%	104128 (3839) 54.4%	2578715 (86757) 55.9%	4614200 (377574) 72.3%	5172277 (274985) 62.6%	12365192 (388216) 64.2%
40-49	19737 (2129) 37.1%	3279 (706) 56.1%	330* (123) 70.5%	23347 (2150) 39.3%	661368 (69553) 46.1%	630899 (120045) 54.7%	442794 (95833) 77.2%	1735062 (175165) 54.9%
50-59	26762 (2933) 45.8%	1581* (467) 59.4%	...	28343 (2911) 46.4%	615227 (57936) 54.7%	237238* (68883) 58.0%	...	852465 (82874) 55.6%
70-79	27711 (2723) 37.9%	1290 (215) 55.0%	157* (76) 44.4%	29158 (2756) 38.4%	609235 (72384) 43.7%	254061 (48779) 54.7%	166679* (74981) 49.1%	1029975 (113049) 46.9%
80	1124* (490) 39.6%	1453 (279) 67.1%	1292 (193) 62.7%	3869 (477) 54.7%	49909* (17501) 49.1%	344191 (67558) 64.4%	1775407 (212910) 58.7%	2169507 (181049) 59.3%
ALL	194052 (6292) 43.2%	33228 (2151) 66.5%	6507 (405) 68.9%	233786 (6701) 46.0%	5568447 (163160) 50.3%	6622812 (419446) 67.2%	7696044 (377146) 61.7%	19887303 (502583) 59.5%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
RECEIVED OCCUPATIONAL SAFETY CONSULTATION IN THE LAST YEAR

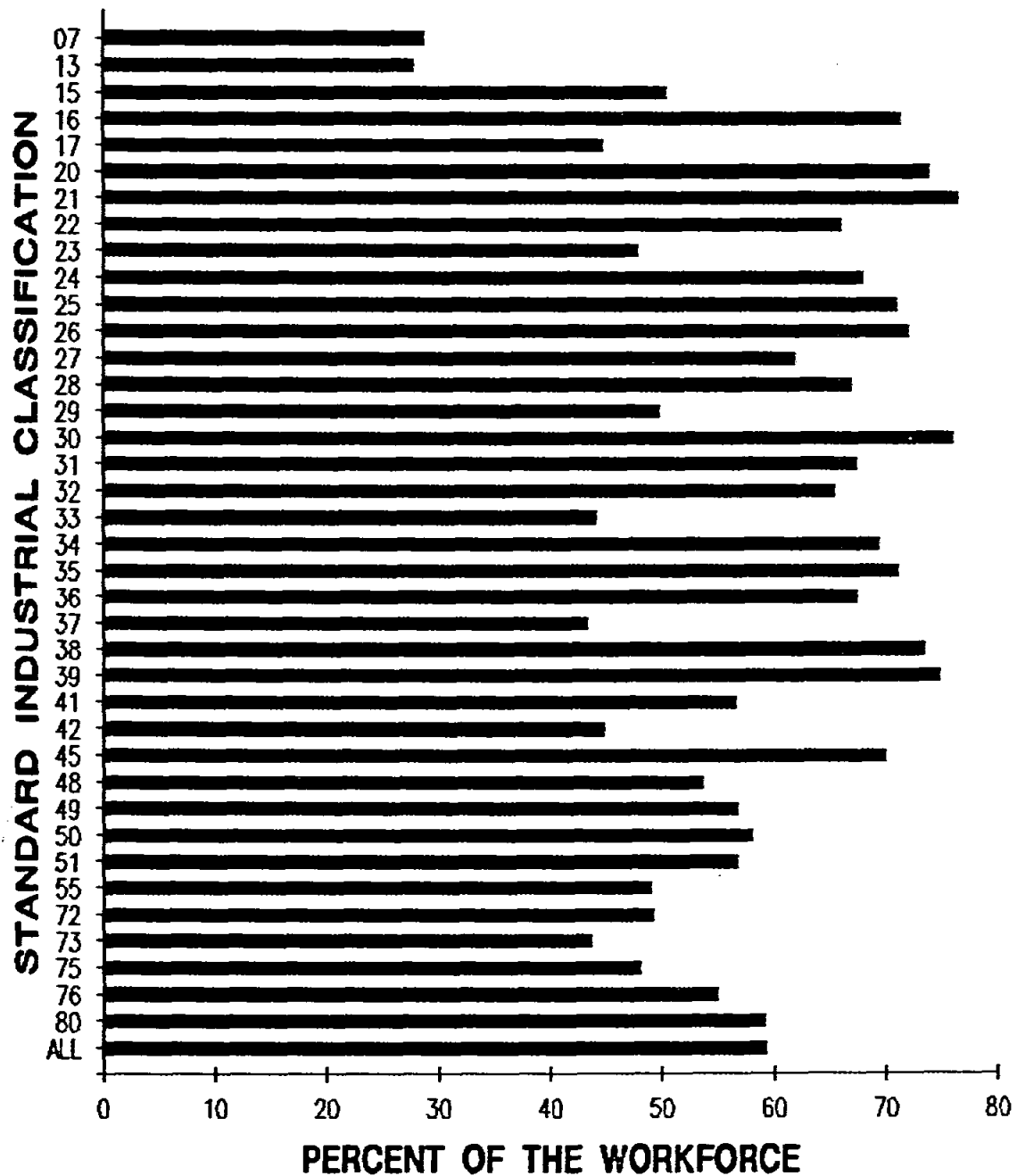
SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	1179* (563) 21.2%	70* (67) 100.0%	...	1249* (553) 22.2%	24945* (14547) 24.1%	7009* (6680) 100.0%	...	31954* (15011) 28.9%
13	3114* (1039) 36.2%	155* (78) 15.2%	...	3269* (1045) 33.8%	85404* (25550) 40.9%	30702* (15952) 17.7%	...	116106* (31252) 28.0%
15	9684 (1585) 38.9%	747* (256) 67.5%	103* (96) 75.9%	10534 (1646) 40.3%	243070 (40144) 43.2%	129104* (40829) 65.1%	80307* (65254) 59.6%	452481 (90105) 50.5%
16	6232 (1198) 55.2%	937 (203) 83.7%	55* (42) 51.0%	7223 (1187) 57.7%	183079 (39953) 64.4%	182156 (45064) 87.7%	58580* (43506) 57.9%	423815 (78413) 71.5%
17	21595 (1886) 37.1%	1072 (243) 55.8%	...	22667 (1939) 37.7%	517497 (48355) 41.3%	193250* (53149) 58.4%	...	710747 (77530) 44.9%
20	6666 (754) 58.4%	2522 (469) 78.4%	443* (112) 79.2%	9630 (901) 63.4%	230152 (24410) 59.3%	548660 (113644) 81.4%	372071* (101694) 75.7%	1150883 (116295) 74.1%
21	30* (43) 100.0%	...	53* (37) 66.7%	83* (50) 76.2%	1866* (2685) 100.0%	...	85457* (67004) 76.2%	87323* (66474) 76.6%
22	1147 (203) 39.1%	1152 (187) 72.6%	193* (73) 64.6%	2492 (245) 51.7%	39709 (9757) 37.5%	255692 (36346) 73.7%	177438* (78058) 68.0%	472839 (81900) 66.2%
23	4838 (1192) 38.7%	1758 (182) 56.7%	135* (68) 56.0%	6732 (1136) 42.4%	159963 (27558) 37.7%	322777 (39332) 52.9%	114010* (59566) 54.7%	596750 (64750) 48.0%
24	4196 (1022) 39.2%	987 (177) 86.0%	92* (75) 88.7%	5275 (970) 44.1%	168479 (31931) 55.5%	161292 (30001) 87.9%	64733* (51314) 70.1%	394505 (76143) 68.1%
25	2310 (514) 55.5%	694 (173) 65.4%	115* (75) 96.9%	3119 (535) 58.4%	85015 (18325) 61.1%	181905* (45644) 70.9%	102081* (64610) 83.0%	369000 (85187) 71.2%
26	2061 (509) 50.1%	1311 (221) 83.5%	111* (40) 52.0%	3483 (536) 59.1%	87150 (20962) 63.3%	240195 (44330) 85.3%	124512* (35160) 60.2%	451857 (59640) 72.2%
27	7792 (961) 43.0%	1297 (171) 69.2%	203* (94) 64.1%	9291 (916) 45.8%	245386 (27137) 51.3%	270756 (50042) 75.0%	217953* (69462) 63.0%	734095 (100657) 62.0%
28	3236 (522) 52.4%	964 (121) 83.1%	261* (87) 68.6%	4460 (492) 57.8%	107943 (12445) 59.7%	199156 (35664) 76.4%	308547* (127379) 64.8%	615646 (115688) 67.1%
29	338* (230) 33.4%	149* (123) 50.9%	66* (32) 65.5%	553* (245) 39.3%	20848* (15172) 50.9%	27486* (18436) 43.5%	62490* (30367) 53.2%	110824* (40556) 50.0%
30	4706 (994) 70.1%	953* (328) 62.0%	208* (69) 93.0%	5868 (1198) 69.3%	155899 (26805) 69.3%	203454* (73324) 69.1%	214004* (70786) 91.6%	573358 (111432) 76.1%
31	320* (207) 34.4%	419* (130) 73.6%	3* (10) 14.0%	742* (284) 48.7%	9466* (5547) 38.0%	105498* (34894) 77.9%	4015* (11440) 25.6%	118979* (36079) 67.6%
32	4773 (1031) 54.3%	574* (148) 56.8%	166* (75) 90.3%	5514 (1090) 55.2%	145068 (20647) 61.2%	122305* (32787) 58.5%	109935* (48796) 85.2%	377309 (54121) 65.6%
33	1483 (245) 35.9%	954 (145) 65.0%	153* (40) 45.4%	2590 (284) 43.6%	63162 (10318) 45.6%	218641 (32589) 70.3%	192264 (42663) 30.9%	474066 (46625) 44.3%



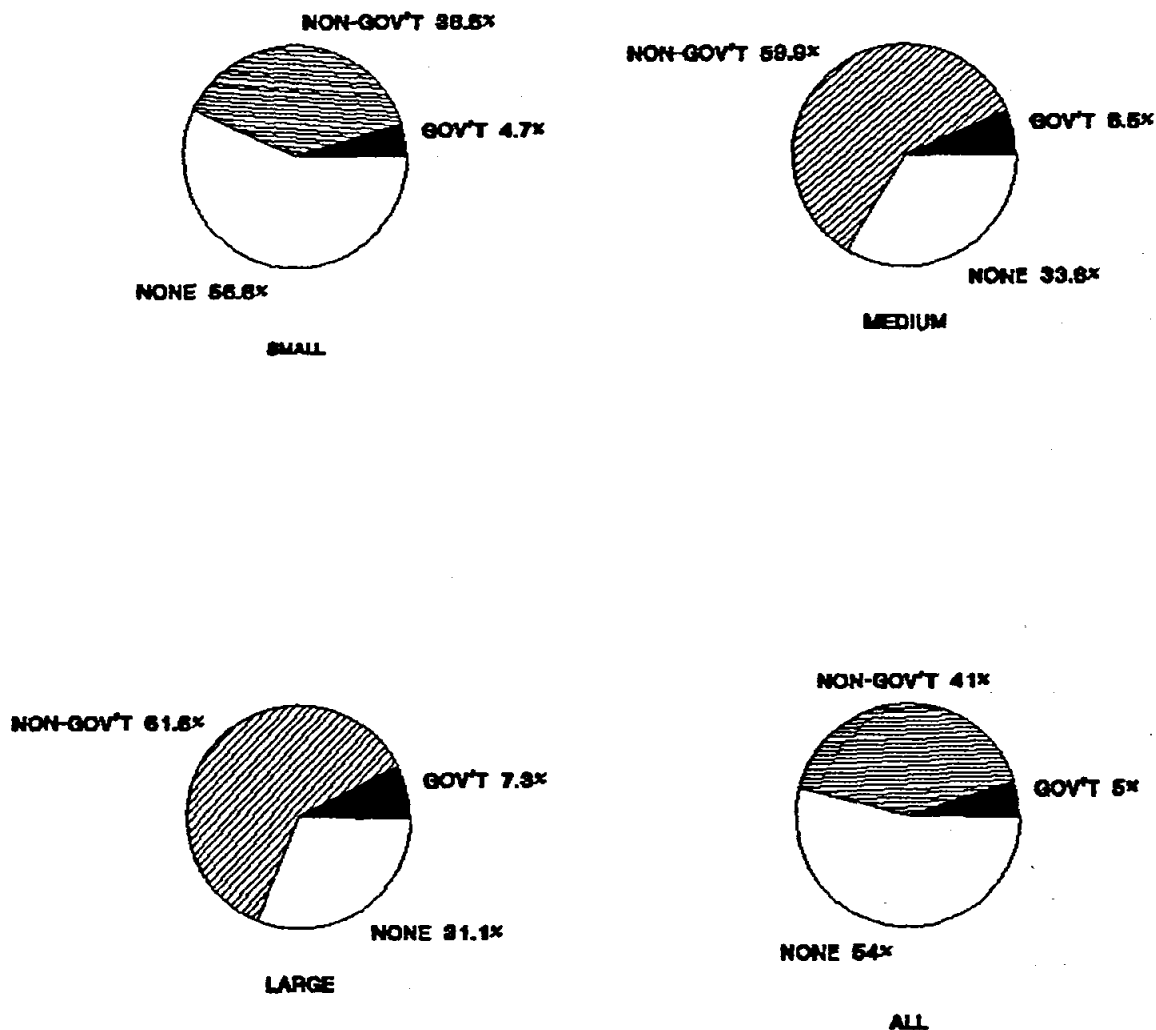
SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	10429 (984) 56.3%	2262 (223) 72.5%	261 (61) 75.3%	12951 (1053) 58.9%	360474 (21803) 65.0%	446385 (35517) 74.8%	237824* (63745) 67.7%	1044683 (81401) 69.5%
35	13385 (1084) 59.1%	2521 (184) 74.0%	605 (80) 77.1%	16511 (1101) 61.5%	385668 (22552) 63.6%	489401 (29553) 74.0%	821593 (131104) 73.8%	1696662 (137159) 71.3%
36	2942 (567) 41.4%	1939 (220) 72.2%	612* (153) 77.7%	5492 (578) 51.9%	101775 (16610) 44.2%	397947 (53822) 72.0%	826314 (151352) 69.9%	1326035 (160153) 67.5%
37	1967* (537) 49.5%	901 (157) 75.7%	224* (69) 53.8%	3092 (599) 55.4%	74814* (21666) 58.9%	185174 (34521) 77.4%	558105 (121132) 36.9%	818093 (121702) 43.5%
38	881 (212) 32.8%	677 (136) 70.7%	339* (132) 81.5%	1897 (274) 46.7%	44472 (10530) 42.5%	125410* (31618) 64.5%	389026* (123466) 84.5%	558909 (126643) 73.6%
39	3412 (812) 52.1%	611* (1282) 76.6%	328* (217) 97.0%	4351* (1556) 56.6%	91405 (19815) 55.1%	112066* (240307) 75.0%	189904* (119941) 90.7%	393375* (236863) 75.0%
41	1393* (362) 31.5%	272* (116) 53.3%	...	1664* (416) 33.8%	63379* (17184) 53.9%	49851* (31957) 61.1%	...	113229* (36914) 56.8%
42	7022 (1487) 35.1%	529* (168) 35.7%	63* (44) 76.3%	7613 (1555) 35.3%	213341 (35470) 43.7%	112345* (36565) 43.4%	44021* (26070) 58.8%	369707 (61504) 45.0%
45	1166* (470) 36.0%	416* (326) 70.5%	134* (57) 91.2%	1716* (549) 43.1%	34101* (9937) 44.0%	53756* (43152) 49.2%	228417* (86543) 86.4%	316275* (91890) 70.1%
48	3083* (1227) 21.0%	779 (186) 86.4%	34* (21) 99.0%	3895* (1237) 24.9%	143055* (57370) 33.6%	148818* (41190) 84.4%	70083* (43687) 100.0%	361957 (77733) 53.8%
49	4895* (1239) 59.6%	1054* (390) 56.6%	100* (90) 57.7%	6049 (1407) 59.0%	157675* (47028) 58.5%	220707* (77633) 51.9%	100272* (60205) 68.4%	478654* (130748) 56.9%
50	13120 (1642) 43.2%	1252* (372) 69.5%	...	14373 (1655) 44.7%	332574 (54095) 52.8%	198812* (63129) 70.2%	...	531387 (83327) 58.2%
51	4327* (1099) 47.5%	237* (237) 100.0%	...	4564* (1209) 48.8%	93712* (25244) 50.6%	27013* (27013) 100.0%	...	120725* (45120) 56.9%
55	9315 (2265) 49.2%	91* (84) 14.7%	...	9406 (2283) 48.1%	188940* (49215) 61.1%	11413* (10448) 11.6%	...	200353* (52183) 49.2%
72	6891 (1279) 33.4%	434* (151) 64.3%	13* (19) 100.0%	7338 (1271) 34.4%	169279 (32994) 44.5%	53462* (19694) 65.0%	10670* (15114) 100.0%	233412 (46262) 49.4%
73	4282 (980) 25.8%	820 (172) 55.1%	144* (66) 42.2%	5246 (1019) 28.5%	138107 (33431) 32.8%	187926 (44064) 53.7%	156008* (68653) 47.4%	482041 (74555) 43.8%
75	11571 (2388) 44.2%	...	...	11571 (2388) 44.1%	202980 (40666) 49.1%	...	...	202980 (40666) 48.2%
76	4966 (1233) 50.9%	36* (45) 29.4%	...	5003 (1243) 50.7%	98869 (21815) 55.4%	12672* (15755) 52.1%	...	111541* (29480) 55.0%
80	1124* (490) 39.6%	1453 (279) 67.1%	1292 (193) 62.7%	3869 (477) 54.7%	49909* (17501) 49.1%	344191 (67558) 64.4%	1775407 (212910) 58.7%	2169507 (181049) 59.3%
A11	191872 (6854) 43.0%	32999 (1415) 66.6%	6507 (260) 69.0%	231378 (7499) 45.8%	5518630 (156381) 50.1%	6577389 (308158) 67.3%	7696044 (319750) 61.8%	19792063 (488891) 59.5%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE IV - 18**  
**OCCUPATIONAL SAFETY CONSULTATION IN THE LAST YEAR**  
**(NOES 1981-1983)**



**FIGURE IV - 19**  
**PLANTS RECEIVING OCCUPATIONAL SAFETY**  
**CONSULTATION BY SOURCE**  
**(NOES 1981-1983)**



**NOES QUESTIONNAIRE ITEM NO. 32**  
**Existence of a Program to Regularly Monitor Physical Agents**

**Intent**

The intent of this question was to determine if the facility had a program to regularly or periodically monitor the presence of such physical agents as heat, vibration, radiation, noise and magnetic fields.

This item was displayed on the questionnaire as:

32. Do you have a program under which you regularly or periodically monitor the presence of physical agents such as heat, vibration, radiation, noise, and magnetic fields?

1 No (Skip to Question 34)

2 Yes (Circle yes or no for each physical agent listed below:)

	<u>Yes</u>	<u>No</u>
1. Heat	1	2
2. Vibration	1	2
3. Radiation	1	2
4. Noise	1	2
5. Magnetic fields	1	2
6. Other	1	2

**Notes**

"To regularly or periodically monitor" refers to programs within the facility which were established to monitor environmental levels of physical agents on a planned or predictable basis.

Tests using instrumentation or monitoring by outside sources are included if the intent was to determine if employee health was at risk and the monitoring was performed at the request of management.

Monitoring of process conditions or of areas where no employee exposure could take place (e.g., inside a closed vessel) or any monitoring not performed under an industrial hygiene/occupational health rationale was not included as a positive response.

**Analysis**

Two analyses of the responses to question 32 are presented.

- (1) Response 32.2 - regular or periodic monitoring of physical agents

The estimates of the plants which have established programs to regularly or periodically monitor the occupational environmental levels of one or

more physical agents, and workers in those plants (by number and proportion of the total) are displayed in Figures IV-20, IV-21, IV-22, and IV-23, and Tables IV-19, and IV-20.

Figure IV-20        Plants monitoring physical agents  
                    (by major industrial group)

Figure IV-21        Plants monitoring physical agents  
                    (by 2-digit SIC)

Figure IV-22        Workers in plants monitoring physical agents  
                    (by major industrial group)

Figure IV-23        Workers in plants monitoring physical agents  
                    (by 2-digit SIC)

Table IV-19        Number and percent of plants and employees in plants  
                    which regularly monitor physical agents (by major  
                    industrial group)

Table IV-20        Number and percent of plants and employees in plants  
                    which regularly monitor physical agents (by 2-digit SIC)

(2) Response 32.2, sub-items 1 to 6 - regular monitoring of specific physical agents

The estimates of the number and proportion of plants and workers in plants which regularly or periodically monitor specific physical agents are displayed in Figure IV-24 and Tables IV-21, IV-22, IV-23 and IV-24.

Figure IV-24        Proportions of physical agent monitoring by plants and  
                    workers in plants

Table IV-21        Number and percent of plants by physical agent  
                    monitored (by major industrial group)

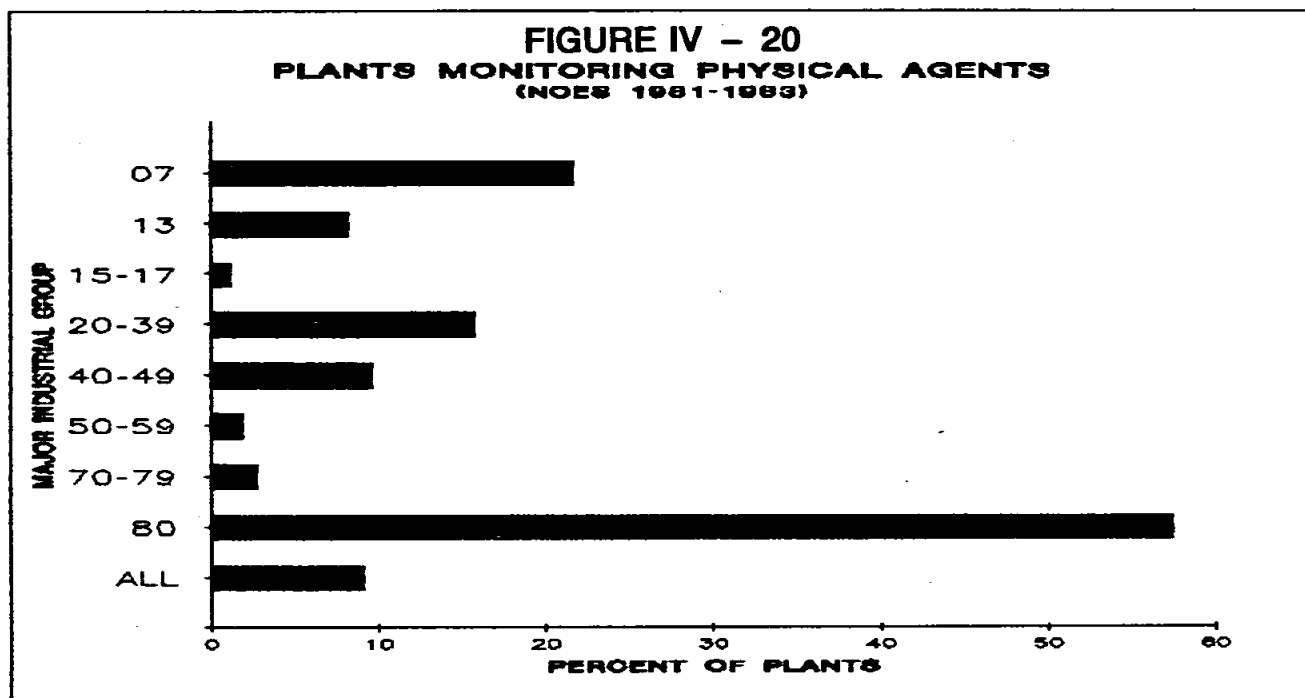
Table IV-22        Number and percent of plants by physical agent  
                    monitored (by 2-digit SIC)

Table IV-23        Number and percent of workers in plants by physical  
                    agent monitored (by major industrial group)

Table IV-24        Number and percent of workers in plants by physical  
                    agent monitored (by 2-digit SIC)

Note: The estimates of plants and workers in plants which monitor specific physical agents shown in Tables 21-24 are not mutually self-exclusive. No attempt should be made to total numbers across the six columns of data provided.

This is because multiple responses to question 32 are possible. Therefore, the effect of adding across columns is to multiply count a single original observation, inflating the estimate(s).



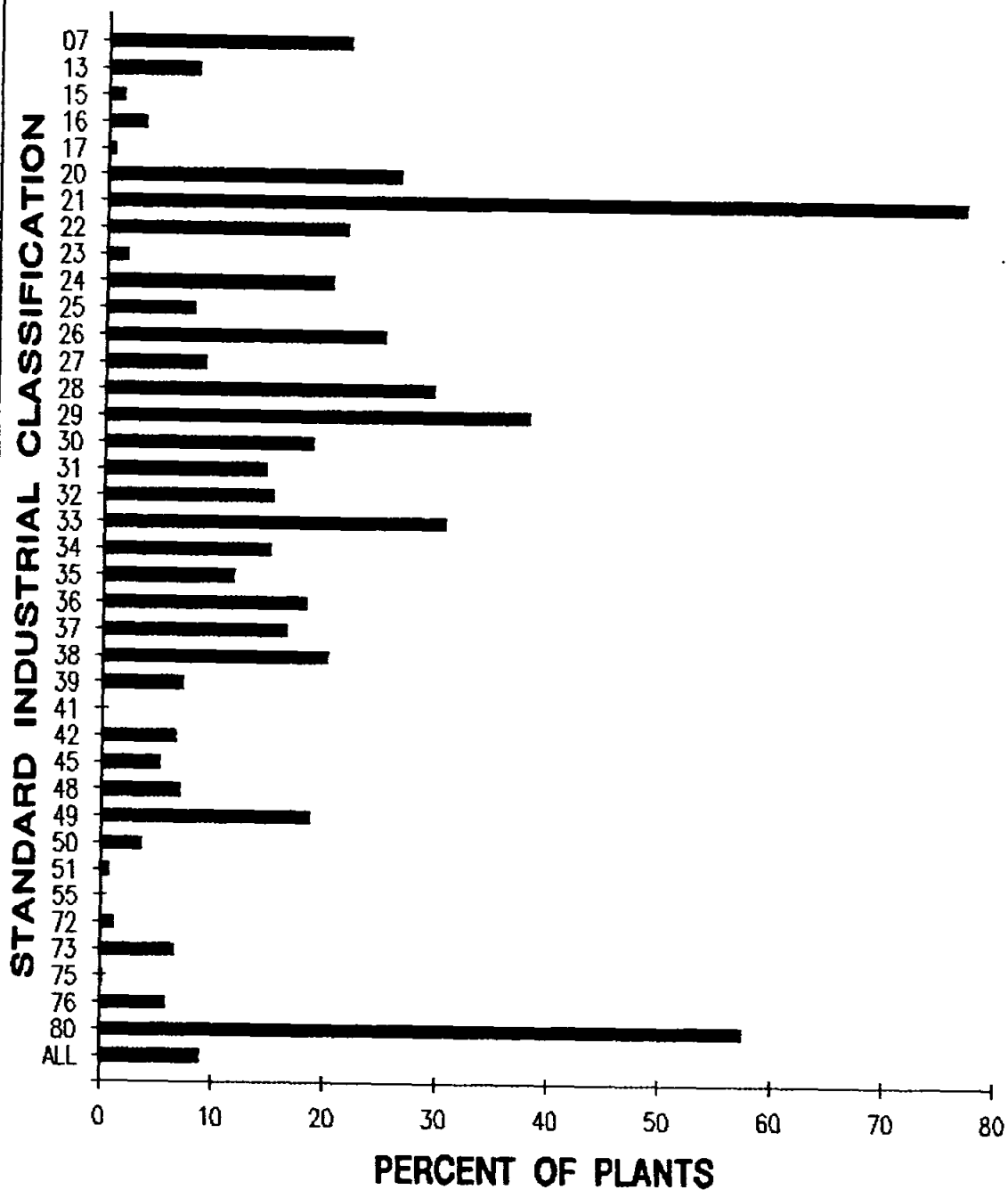
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-19

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH REGULARLY MONITOR PHYSICAL AGENTS

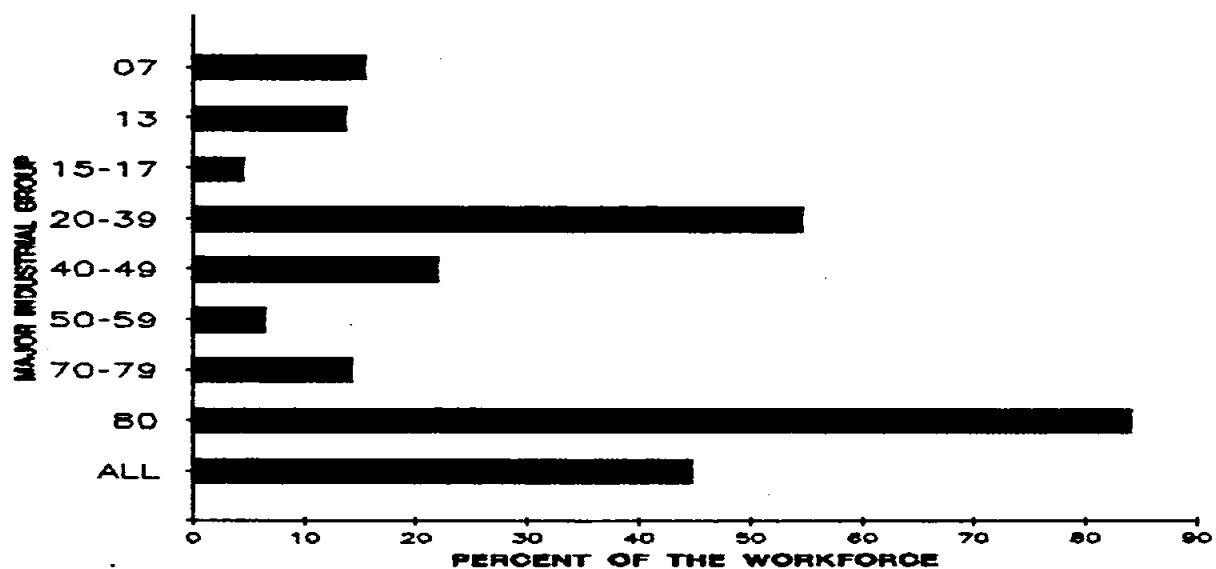
MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	1230* (637) 22.1%	...	...	1230* (637) 21.8%	17423* (9111) 16.8%	...	...	17423* (9111) 15.7%
13	533* (230) 6.2%	272* (180) 26.7%	...	805* (242) 8.3%	13334* (5769) 6.4%	44654* (22314) 25.7%	...	57988* (22246) 14.0%
15-17	755* (245) .8%	501* (169) 12.1%	12* (6) 4.9%	1268 (287) 1.3%	25461* (8711) 1.2%	79721* (28017) 10.8%	38023* (20661) 16.1%	143205* (37243) 4.7%
20-39	12748 (1205) 8.3%	12942 (1253) 40.8%	4692 (243) 74.8%	30383 (1911) 15.9%	610678 (54972) 13.2%	2896196 (278566) 45.4%	7055282 (232503) 85.4%	10562156 (419240) 54.8%
40-49	4472* (1168) 8.4%	1045* (370) 17.9%	237* (85) 50.7%	5753 (1237) 9.7%	176385 (43423) 12.3%	205352* (71859) 17.8%	318737* (82133) 55.6%	700475 (125616) 22.2%
50-59	806* (601) 1.4%	443* (242) 16.7%	...	1249* (662) 2.0%	15068* (11463) 1.3%	86821* (52841) 21.2%	...	101889* (54924) 6.6%
70-79	1590* (676) 2.2%	418* (133) 17.8%	165* (110) 46.5%	2172* (726) 2.9%	34845* (15225) 2.5%	100390* (28697) 21.6%	184220* (98797) 54.3%	319454* (102148) 14.5%
80	665* (273) 23.4%	1633 (251) 75.4%	1775 (225) 86.1%	4073 (376) 57.6%	36799* (13503) 36.2%	435211 (69982) 81.4%	2612026 (295366) 86.4%	3084035 (287954) 84.3%
ALL	22799 (2056) 5.1%	17254 (1381) 34.5%	6880 (359) 72.9%	46933 (2615) 9.2%	929992 (75135) 8.4%	3848344 (304234) 39.0%	10208288 (397784) 81.9%	14986624 (538400) 44.9%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
...No facilities observed.

**FIGURE IV - 21**  
**PLANTS MONITORING PHYSICAL AGENTS**  
 (NOES 1981-1983)

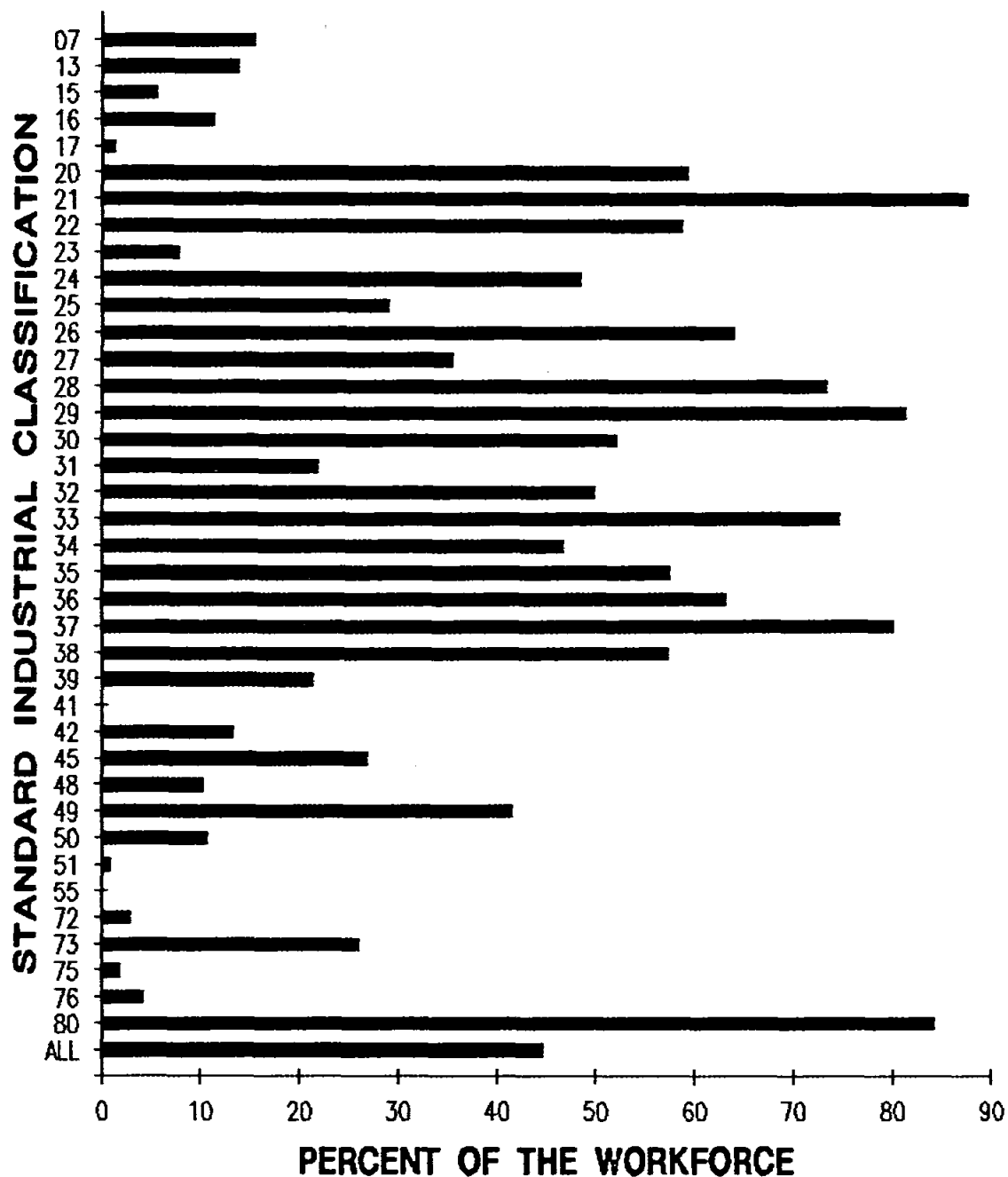


**FIGURE IV - 22**  
**WORKERS IN PLANTS MONITORING PHYSICAL AGENTS**  
**(NOES 1981-1989)**





**FIGURE IV - 23**  
**WORKERS IN PLANTS MONITORING PHYSICAL AGENTS**  
 (NOES 1981-1983)



NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
REGULARLY MONITOR PHYSICAL AGENTS

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	1230* (637) 22.1%	---	---	1230* (637) 21.8%	17423* (9111) 16.8%	---	---	17423* (9111) 15.7%
13	533* (230) 6.2%	272* (180) 26.7%	---	805* (242) 8.3%	13334* (5769) 6.4%	44654* (22314) 25.7%	---	57988* (22446) 14.0%
15	337* (237) 1.4%	77* (59) 6.9%	8* (5) 6.2%	422* (239) 1.6%	9432* (7133) 1.7%	9206* (6490) 4.6%	32925* (20856) 24.4%	51562* (23568) 5.8%
16	64* (68) .6%	370* (160) 33.1%	3* (4) 3.2%	438* (166) 3.5%	4889* (5177) 1.7%	58216* (26197) 28.0%	5099* (5479) 5.0%	68203* (25781) 11.5%
17	354* (415) .6%	54* (45) 2.8%	---	408* (414) .7%	11140* (13187) .9%	12299* (10031) 3.7%	---	23439* (16160) 1.5%
20	1713* (471) 15.0%	1838 (304) 57.2%	453* (141) 81.1%	4005 (581) 26.4%	81439 (18290) 21.0%	414152 (72394) 61.5%	427416* (117583) 86.9%	923007 (124946) 59.4%
21	30* (43) 100.0%	---	54* (34) 68.0%	84* (48) 77.1%	1866* (2685) 100.0%	---	98088* (66468) 87.5%	99954* (65783) 87.7%
22	157* (122) 5.3%	629 (155) 39.6%	259* (78) 86.7%	1045 (231) 21.7%	9167* (6536) 8.6%	172759* (43419) 49.8%	239295* (88979) 91.7%	421221* (105340) 59.0%
23	49* (59) .4%	222* (94) 7.2%	47* (41) 19.4%	318* (109) 2.0%	2433* (2928) .6%	49636* (28634) 8.1%	47062* (40984) 22.6%	99131* (45184) 8.0%
24	1598 (343) 14.9%	735* (184) 64.0%	104* (74) 100.0%	2437 (379) 20.4%	72080 (15120) 23.7%	117827* (31055) 64.2%	92355* (52501) 100.0%	282261 (60627) 48.7%
25	220* (193) 5.3%	109* (95) 10.2%	101* (74) 84.9%	430* (248) 8.0%	9822* (10054) 7.1%	34448* (30995) 13.4%	107692* (61537) 87.6%	151962* (67386) 29.3%
26	404* (182) 9.8%	910* (252) 58.0%	170* (83) 79.4%	1484 (305) 25.2%	33454* (14568) 24.3%	183630* (51136) 65.2%	184036* (67815) 89.0%	401119 (90347) 64.1%
27	1087 (223) 6.0%	530* (148) 28.3%	233* (81) 73.7%	1849 (255) 9.1%	44575* (14088) 9.3%	100167* (30895) 27.8%	279162 (65076) 80.7%	423904 (71725) 35.8%
28	1180* (390) 19.1%	742 (119) 64.0%	357 (67) 94.0%	2279 (458) 29.6%	45492* (14398) 25.2%	172164 (32043) 66.0%	457262 (101384) 96.0%	674919 (117708) 73.5%
29	176* (181) 17.4%	259* (122) 88.3%	101* (42) 100.0%	536* (219) 38.1%	11069* (11377) 27.0%	52186* (19475) 82.5%	117545* (70259) 100.0%	180800* (79056) 81.5%
30	827* (330) 12.3%	574* (167) 37.4%	193* (74) 86.0%	1594* (412) 18.8%	42709* (15044) 19.0%	134824* (38752) 45.8%	216359* (74266) 92.6%	393892 (82207) 52.3%
31	88* (61) 9.5%	134* (69) 23.5%	---	222* (100) 14.6%	5104* (3905) 20.5%	33560* (17672) 24.8%	---	38665* (18745) 22.0%
32	740* (273) 8.4%	601 (137) 59.4%	184* (71) 99.9%	1525 (318) 15.3%	32412* (11294) 13.7%	126747* (32655) 60.6%	128993* (49687) 100.0%	288152 (60999) 50.1%
33	691* (222) 16.7%	832 (195) 56.7%	300 (60) 88.9%	1824 (351) 30.7%	39054* (12894) 28.2%	177413 (43558) 57.0%	584482 (91454) 94.0%	800949 (102656) 74.8%

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	1521 (297) 8.2%	1501 (182) 48.1%	288* (92) 83.1%	3310 (344) 15.1%	78995 (15616) 14.2%	336822 (35362) 56.4%	290079* (117511) 82.6%	705896 (129176) 47.0%
35	1168* (320) 5.2%	1389 (150) 40.8%	632 (93) 80.6%	3189 (356) 11.9%	46710 (10669) 7.7%	332411 (31817) 50.3%	991388 (160523) 89.1%	1370509 (166245) 57.6%
36	445* (201) 6.3%	941 (152) 35.1%	552 (101) 70.1%	1938 (260) 18.3%	22650* (10101) 9.8%	245478 (38335) 44.4%	977439 (150914) 82.7%	1245567 (159873) 63.4%
37	142* (118) 3.6%	454* (117) 38.1%	331 (80) 79.7%	927 (215) 16.6%	8955* (7379) 7.1%	87639* (24812) 36.6%	1413134 (231121) 93.3%	1509728 (234493) 80.3%
38	296* (165) 11.0%	212* (101) 22.2%	314* (119) 75.5%	823 (187) 20.3%	11311* (6085) 10.8%	47591* (25906) 24.5%	378030* (126472) 82.1%	436932* (126191) 57.5%
39	218* (155) 3.3%	328* (679) 41.1%	20* (17) 6.0%	566* (695) 7.4%	11380* (8305) 6.9%	76742* (162766) 51.4%	25466* (19911) 12.2%	113588* (159081) 21.6%
41	...	...	...	...	...	...	...	...
42	1373* (519) 6.9%	55* (43) 3.7%	47* (36) 56.9%	1475* (512) 6.8%	48378* (15735) 9.9%	10205* (7195) 3.9%	52349* (44163) 70.0%	110932* (42839) 13.5%
45	86* (129) 2.7%	75* (75) 12.8%	51* (27) 35.0%	213* (152) 5.4%	4833* (7238) 6.2%	7769* (7769) 7.1%	109226* (58968) 41.3%	121828* (58401) 27.0%
48	1101* (773) 7.5%	5* (5) .6%	19* (16) 56.8%	1125* (771) 7.2%	32454* (19013) 7.6%	1043* (945) .6%	37029* (29526) 52.8%	70527* (35024) 10.5%
49	965* (477) 11.8%	838* (314) 45.0%	120* (90) 69.2%	1923* (636) 18.8%	64914* (36237) 24.1%	165669* (60478) 38.9%	120133* (61318) 82.0%	350716* (102759) 41.7%
50	733* (594) 2.4%	443* (242) 24.6%	...	1176* (654) 3.7%	13172* (11292) 2.1%	86821* (52841) 30.7%	...	99993* (54801) 10.9%
51	73* (66) .8%	...	...	73* (66) .8%	1896* (1708) 1.0%	...	...	1896* (1708) .9%
55	...	...	...	...	...	...	...	...
72	188* (220) .9%	80* (80) 11.9%	...	268* (235) 1.3%	5259* (6173) 1.4%	8821* (8829) 10.7%	...	14080* (10828) 3.0%
73	805* (370) 4.9%	279* (102) 18.7%	165* (110) 48.3%	1249* (409) 6.8%	20913* (8150) 5.0%	83331* (27890) 23.8%	184220* (98797) 56.0%	288464* (98713) 26.2%
75	...	59* (60) 99.7%	...	59* (60) .2%	...	8238* (8380) 100.0%	...	8238* (8380) 2.0%
76	597* (523) 6.1%	...	...	597* (523) 6.0%	8672* (8395) 4.9%	...	...	8672* (8395) 4.3%
80	665* (273) 23.4%	1633 (251) 75.4%	1775 (225) 86.1%	4073 (376) 57.6%	36799* (13503) 36.2%	435211 (69982) 81.4%	2612026 (295366) 86.4%	3084035 (287954) 84.3%
All	21854 (1861) 4.9%	17205 (1103) 34.7%	6880 (362) 73.0%	45939 (2229) 9.1%	904186 (73514) 8.2%	3834196 (257242) 39.2%	10208288 (386111) 81.9%	14946670 (472785) 44.9%

\*Standard error &gt;25% of the estimate. The estimate may be unreliable.

...No facilities observed.

## NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-21

## NUMBER AND PERCENT OF PLANTS BY PHYSICAL AGENT MONITORED

MAJOR GROUP	HEAT	VIBRATION	RADIATION	NOISE	MAGNETIC FIELDS	OTHER AGENTS
07	...	...	1230* (637) 21.8%	...	...	...
13	174* (173) 1.8%	...	533* (230) 5.5%	272* (180) 2.8%	...	...
15-17	272* (222) .3%	88* (65) .1%	316* (409) .3%	1185 (276) 1.2%	...	64* (68) .1%
20-39	4255 (563) 2.2%	1443 (326) .8%	3514 (383) 1.8%	28414 (1896) 14.9%	292* (90) .2%	753 (162) .4%
40-49	1131* (421) 1.9%	737* (419) 1.2%	941* (444) 1.6%	4816 (1152) 8.1%	726* (275) 1.2%	64* (46) .1%
50-59	405* (406) .7%	20* (19) .0%	101* (90) .2%	1249* (662) 2.0%	...	...
70-79	683* (515) .9%	3* (3) .0%	1127* (392) 1.5%	1064* (439) 1.4%	10* (8) .0%	157* (110) .2%
80	671 (140) 9.5%	214* (100) 3.0%	3999 (374) 56.6%	506 (125) 7.2%	191* (91) 2.7%	263* (96) 3.7%
ALL	7590 (1012) 1.5%	2505 (545) .5%	11761 (1128) 2.3%	37506 (2382) 7.4%	1219 (304) .2%	1302 (233) .3%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.



## NUMBER AND PERCENT OF PLANTS BY PHYSICAL AGENT MONITORED

SIC CODE	HEAT	VIBRATION	RADIATION	NOISE	MAGNETIC FIELDS	OTHER AGENTS
07	...	...	1230* (637) 21.8%	...	...	...
13	174* (173) 1.8%	...	533* (230) 5.5%	272* (180) 2.8%	...	...
15	233* (215) .9%	...	19* (14) .1%	403* (237) 1.5%	...	...
16	39* (39) .3%	39* (39) .3%	...	374* (159) 3.0%	...	64* (68) .5%
17	...	48* (59) .1%	298* (410) .5%	408* (414) .7%	...	...
20	934* (361) 6.1%	148* (99) 1.0%	143 (33) .9%	3666 (581) 24.1%	...	98* (54) .6%
21	7* (11) 6.8%	7* (11) 6.8%	11* (11) 9.8%	84* (48) 77.1%	7* (11) 6.8%	...
22	248* (80) 5.2%	54* (47) 1.1%	46* (44) 1.0%	1045 (231) 21.7%	54* (47) 1.1%	126* (58) 2.6%
23	32* (34) .2%	...	...	318* (109) 2.0%	...	...
24	70* (72) .6%	119* (102) 1.0%	111* (72) .9%	2437 (379) 20.4%	...	9* (8) .1%
25	15* (29) .3%	15* (29) .3%	...	430* (248) 8.0%	...	...
26	115* (91) 2.0%	92* (66) 1.6%	101* (68) 1.7%	1451 (298) 24.6%	...	67* (55) 1.1%
27	389* (230) 1.9%	15* (26) .1%	80* (49) .4%	1528 (321) 7.5%	...	26* (25) .1%
28	214* (93) 2.8%	58* (42) .8%	378 (85) 4.9%	2266 (459) 29.4%	59* (42) .8%	7* (8) .1%
29	159* (53) 11.3%	130* (50) 9.3%	168* (58) 12.0%	506* (222) 36.0%	...	...
30	106* (62) 1.2%	50* (60) .6%	262* (111) 3.1%	1533* (395) 18.1%	3* (2) .0%	...
31	38* (46) 2.5%	...	...	184* (85) 12.0%	...	...
32	217* (111) 2.2%	60* (37) .6%	148* (108) 1.5%	1474 (298) 14.7%	...	6* (12) .1%
33	315* (136) 5.3%	76* (48) 1.3%	281* (95) 4.7%	1824 (351) 30.7%	28* (28) .5%	31 (8) .5%

SIC CODE	HEAT	VIBRATION	RADIATION	NOISE	MAGNETIC FIELDS	OTHER AGENTS
34	372* (172) 1.7%	285* (142) 1.3%	383* (141) 1.7%	3089 (332) 14.1%	47* (42) .2%	60* (44) .3%
35	346* (131) 1.3%	104* (61) .4%	334* (173) 1.2%	2764 (371) 10.3%	13* (11) .0%	205* (83) .8%
36	433* (224) 4.1%	179* (96) 1.7%	520* (165) 4.9%	1699 (264) 16.1%	53* (31) .5%	75* (103) .7%
37	34* (10) .6%	20* (7) .4%	259* (85) 4.6%	876 (209) 15.7%	24* (14) .4%	23* (6) .4%
38	188* (104) 4.6%	...	272* (120) 6.7%	693 (167) 17.1%	3* (3) .1%	10* (12) .2%
39	22* (58) .3%	32* (56) .4%	17* (47) .2%	549* (681) 7.1%	...	10* (10) .1%
41	...	...	...	...	...	...
42	164* (140) .8%	...	...	1192* (578) 5.5%	144* (149) .7%	25* (26) .1%
45	...	...	213* (152) 5.4%	127* (82) 3.2%	...	...
48	366* (280) 2.3%	350* (279) 2.2%	110* (105) .7%	1125* (771) 7.2%	90* (99) .6%	...
49	492* (393) 4.8%	155* (112) 1.5%	618* (387) 6.0%	1394* (453) 13.6%	492* (393) 4.8%	38* (35) .4%
50	405* (406) 1.3%	20* (19) .1%	101* (90) .3%	1176* (654) 3.7%	...	...
51	...	...	...	73* (66) .8%	...	...
55	...	...	...	...	...	...
72	188* (220) .9%	...	...	80* (80) .4%	...	...
73	205* (90) 1.1%	3* (3) .0%	829* (241) 4.5%	916* (425) 5.0%	10* (8) .1%	157* (110) .9%
75	...	...	...	59* (60) .2%	...	...
76	290* (417) 2.9%	...	298* (298) 3.0%	9* (8) .1%	...	...
80	671 (140) 9.5%	214* (100) 3.0%	3999 (374) 56.6%	506 (125) 7.2%	191* (91) 2.7%	263* (96) 3.7%
ALL	7503 (1063) 1.5%	2273 (436) .4%	11761 (962) 2.3%	36550 (2255) 7.2%	1219* (328) .2%	1302 (242) .3%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.





NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-23

NUMBER AND PERCENT OF WORKERS IN PLANTS BY PHYSICAL AGENT MONITORED

MAJOR GROUP	HEAT	VIBRATION	RADIATION	NOISE	MAGNETIC FIELDS	OTHER AGENTS
07	...	...	17423* (9111) 15.7%	...	...	...
13	19817* (19716) 4.8%	...	13334* (5769) 3.2%	44654* (22314) 10.8%	...	...
15-17	12938* (9230) .4%	6555* (5439) .2%	25394* (16817) .8%	122443* (38484) 4.0%	...	4889* (5177) .2%
20-39	2076687 (285252) 10.8%	697046 (119565) 3.6%	3933971 (305293) 20.4%	10008059 (356855) 52.0%	565780 (56950) 2.9%	1061273 (154132) 5.5%
40-49	140058* (39247) 4.4%	77554* (53108) 2.5%	323430* (91666) 10.2%	582555 (110445) 18.4%	64190* (30510) 2.0%	36637* (26733) 1.2%
50-59	10997* (7613) .7%	6376* (6191) .4%	15106* (13472) 1.0%	101889* (54924) 6.6%	...	...
70-79	114972* (43239) 5.2%	21638* (23154) 1.0%	265771* (98801) 12.1%	240170* (88301) 10.9%	49798* (35972) 2.3%	107287* (75884) 4.9%
80	609573 (103949) 16.7%	205527* (83188) 5.6%	3056437 (292369) 83.5%	648505 (143105) 17.7%	195951* (83851) 5.4%	192331* (73661) 5.3%
ALL	2985041 (310026) 8.9%	1014696 (156973) 3.0%	7650865 (444329) 22.9%	11748275 (415711) 35.2%	875719 (111800) 2.6%	1402417 (188898) 4.2%

\*Standard error >25% of the estimate. The estimate may be unreliable.

...No facilities observed.

## NUMBER AND PERCENT OF WORKERS IN PLANTS BY PHYSICAL AGENT MONITORED

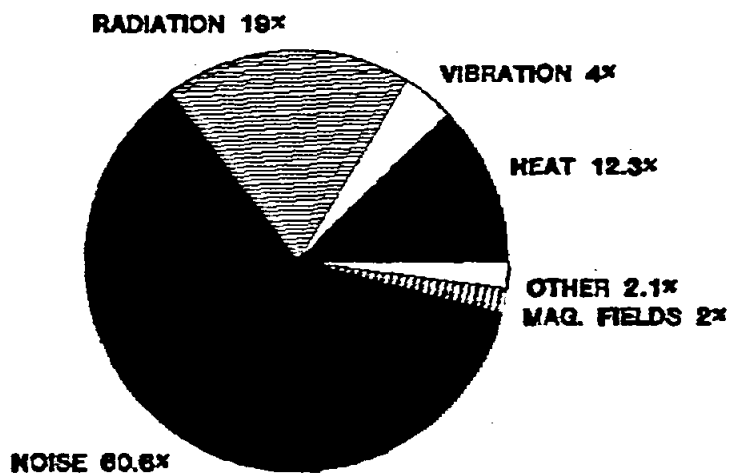
SIC CODE	HEAT	VIBRATION	RADIATION	NOISE	MAGNETIC FIELDS	OTHER AGENTS
07	---	---	17423* (9111) 15.7%	---	---	---
13	19817* (19716) 4.8%	---	13334* (5769) 3.2%	44654* (22314) 10.8%	---	---
15	7445* (6875) .8%	---	15873* (11634) 1.8%	35689* (23673) 4.0%	---	---
16	5493* (5493) .9%	5493* (5493) .9%	---	63314* (25893) 10.7%	---	4889* (5177) .8%
17	---	1062* (1293) .1%	9520* (13128) .6%	23439* (16160) 1.5%	---	---
20	133130* (43714) 8.6%	31005* (19299) 2.0%	82296* (31061) 5.3%	907424* (128294) 58.4%	---	43836* (24254) 2.8%
21	16019* (23625) 14.1%	16019* (23625) 14.1%	41763* (36135) 36.6%	99954* (65783) 87.7%	16019* (23625) 14.1%	---
22	108401* (37867) 15.2%	33112* (28660) 4.6%	11037* (9274) 1.5%	421221* (105340) 59.0%	33112* (28660) 4.6%	109455* (55815) 15.3%
23	10334* (11130) .8%	---	---	99131* (45184) 8.0%	---	---
24	35932* (25468) 6.2%	15000* (12132) 2.6%	9413* (5384) 1.6%	282261 (60627) 48.7%	---	2141* (1963) .4%
25	4952* (9618) 1.0%	4952* (9618) 1.0%	---	151962* (67386) 29.3%	---	---
26	106574* (41935) 17.0%	25087* (23507) 4.0%	86424* (61434) 13.8%	396162 (89360) 63.3%	---	81466* (61087) 13.0%
27	40074* (20207) 3.4%	7994* (14102) .7%	80861* (45220) 6.8%	400070 (68249) 33.8%	---	39323* (23208) 3.3%
28	176513* (60276) 19.2%	34640* (21465) 3.8%	331510* (62749) 36.1%	674763 (117689) 73.5%	43515* (40467) 4.7%	13295* (16230) 1.4%
29	53422* (22484) 24.1%	50379* (22450) 22.7%	110008* (69038) 49.6%	177757* (80033) 80.1%	---	---
30	126817* (63999) 16.8%	32576* (26261) 4.3%	184025* (73088) 24.4%	379954 (83543) 50.4%	11738* (10209) 1.6%	---
31	2917* (3488) 1.7%	---	---	35748* (18089) 20.3%	---	---
32	68887* (33510) 12.0%	33001* (22291) 5.7%	53446* (35620) 9.3%	286305 (60852) 49.8%	---	1581* (3185) .3%
33	242634* (86110) 22.7%	70377* (51024) 6.6%	448612 (65032) 41.9%	800949 (102656) 74.8%	5581* (5581) .5%	132292* (55435) 12.4%

SIC CODE	HEAT	VIBRATION	RADIATION	NOISE	MAGNETIC FIELDS	OTHER AGENTS
34	71388* (43093) 4.8%	52332* (29921) 3.5%	170464* (85366) 11.3%	661723* (128236) 44.0%	11825* (10380) .8%	29915* (26619) 2.0%
35	211289* (58223) 8.9%	39813* (21867) 1.7%	307294 (58102) 12.9%	1305127 (153257) 54.8%	78209* (62789) 3.3%	228500 (40801) 9.6%
36	299047* (163161) 15.2%	128854* (52001) 6.6%	733270 (154977) 37.3%	1114163 (160893) 56.7%	140019* (60530) 7.1%	190136* (105118) 9.7%
37	191376* (56365) 10.2%	96819* (48782) 5.1%	1032185 (225368) 54.9%	1299066 (184904) 69.1%	189476* (75279) 10.1%	160759* (64621) 8.6%
38	171359* (119789) 22.6%	...	246571* (108497) 32.5%	405526* (123186) 53.4%	36287* (40569) 4.8%	9107* (11012) 1.2%
39	5623* (14998) 1.1%	25089* (20178) 4.8%	4792* (13146) .9%	108795* (153546) 20.7%	...	19466* (18968) 3.7%
41	...	...	...	...	...	...
42	24555* (21241) 3.0%	...	...	102314* (42788) 12.5%	4175* (4321) .5%	20111* (20857) 2.4%
45	...	...	121828* (58401) 27.0%	116995* (58997) 25.9%	...	...
48	40115* (26080) 6.0%	16312* (12249) 2.4%	44257* (32451) 6.6%	70527* (35024) 10.5%	7228* (7928) 1.1%	...
49	52788* (33287) 6.3%	53117* (47936) 6.3%	157345* (58658) 18.7%	248182* (84667) 29.5%	52788* (33287) 6.3%	16526* (15205) 2.0%
50	10997* (7613) 1.2%	6376* (6191) .7%	15106* (13472) 1.7%	99993* (54801) 10.9%	...	...
51	...	...	...	1896* (1708) .9%	...	...
55	...	...	...	...	...	...
72	5259* (6173) 1.1%	...	...	8821* (8829) 1.9%	...	...
73	104202* (40325) 9.5%	21638* (23154) 2.0%	263093* (98520) 23.9%	222628* (86248) 20.2%	49798* (35972) 4.5%	107287* (75884) 9.8%
75	...	...	...	8238* (8380) 2.0%	...	...
76	5511* (7915) 2.7%	...	2678* (2679) 1.3%	483* (423) .2%	...	...
80	609573 (103949) 16.7%	205527* (83188) 5.6%	3056437 (292369) 83.5%	648505 (143105) 17.7%	195951* (83851) 5.4%	192331* (73661) 5.3%
ALL	2968959 (308765) 8.9%	1006571 (134964) 3.0%	7650865 (381193) 23.0%	11710255 (475091) 35.2%	875719 (141190) 2.6%	1402417 (207451) 4.2%

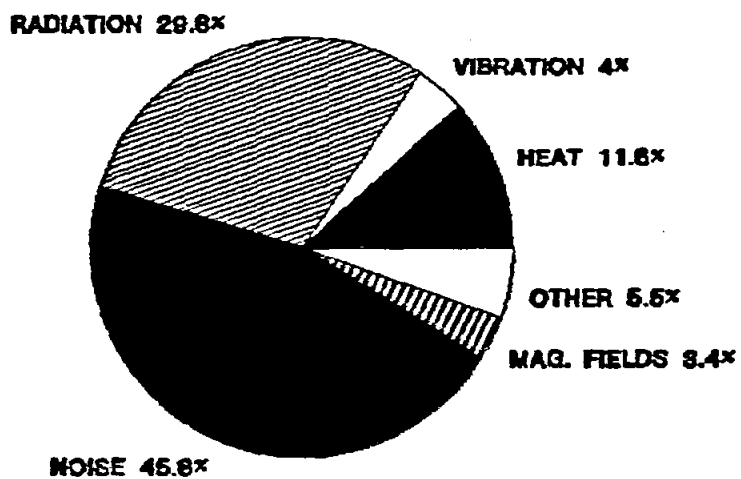
\*Standard error &gt;25% of the estimate. The estimate may be unreliable.

...No facilities observed.

**FIGURE IV - 24**  
**PROPORTIONS OF PHYSICAL AGENT**  
**MONITORING BY PLANTS AND WORKERS IN PLANTS**  
**(NOES 1981-1983)**



**PLANTS**



**WORKERS**

**NOES QUESTIONNAIRE ITEM NO. 33**  
**Retention of Records From a Physical Agent Monitoring Program**

**Intent**

The intent of this question was to determine the length of time that facilities retain the records from programs to monitor physical agents in the workplace.

This item was displayed on the questionnaire as:

33. How long do you retain the records of the monitoring program?

\_ \_ Years (If "forever" code "99")  
(If "unknown" code "UK")

**Notes**

This question was asked only of those respondents who indicated that a program to monitor physical agents was in existence in the surveyed facility.

Definitions, inclusions, and exclusions pertaining to physical agent monitoring are found in the Notes text of questionnaire item 32.

Three classes of responses to question 33 were possible. In analyzing these responses, it was decided that an unknown (coded UK) duration was of no analytical value. Therefore, analysis of the two remaining classes of responses was performed. A "99" or "forever" response did not allow for specificity, so analysis was performed to estimate the number of plants, and workers in those plants, where the records of physical agent monitoring were kept "forever". Approximately 6% of all plants, employing about 32% of the workforce, fall into this category.

The remaining respondents gave a specific ("non-forever") value which could be analyzed. These responses were averaged across the estimated population of plants and workers.

**Analysis**

Two analyses of the responses to question 33 are presented.

- (1) Response 33 - "Non-forever" or average years of retention for the records from physical agent monitoring programs

The estimated average ("non-forever") length of time that records from physical agent monitoring programs are retained are displayed in Figures IV-25 and IV-26, and Tables IV-25 and IV-26.

Figure IV-25	Average number of "non-forever" years plants keep physical agent monitoring records (by major industrial group)
Figure IV-26	Average number of "non-forever" years plants keep physical agent monitoring records (by 2-digit SIC)

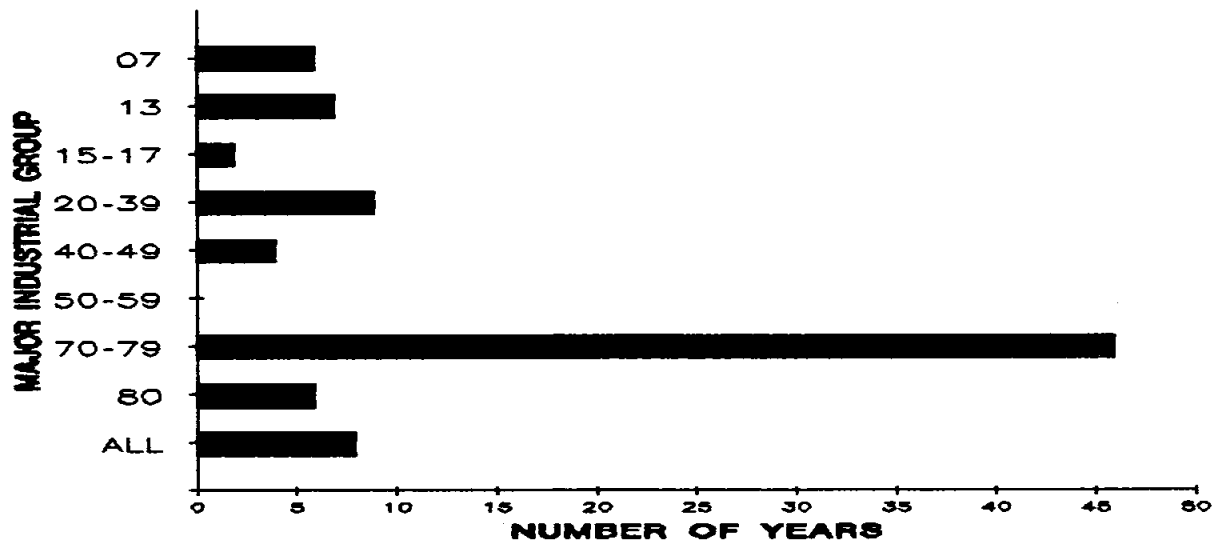
<b>Table IV-25</b>	<b>Average number of years facilities keep physical agent monitoring records among plants not reporting "forever" (by major industrial group)</b>
<b>Table IV-26</b>	<b>Average number of years facilities keep physical agent monitoring records among plants not reporting "forever" (by 2-digit SIC)</b>

**(2) Response 33 - Physical agent monitoring records kept "forever"**

The estimates of the plants which keep physical agent monitoring records "forever", and workers in those plants (by number and proportion of the total) are displayed in Figure IV-27 and IV-28, and Tables IV-27 and IV-28.

<b>Figure IV-27</b>	<b>Proportion of plants which keep physical agent monitoring records "forever" (by major industrial group)</b>
<b>Figure IV-28</b>	<b>Proportion of plants which keep physical agent monitoring records "forever" (by 2-digit SIC)</b>
<b>Table IV-27</b>	<b>Number and percent of plants and employees in plants which keep physical agent monitoring records "forever" (by major industrial group)</b>
<b>Table IV-28</b>	<b>Number and percent of plants and employees in plants which keep physical agent monitoring records "forever" (by 2-digit SIC)</b>

**FIGURE IV - 25**  
**AVERAGE NUMBER OF "NON-FOREVER" YEARS PLANTS**  
**KEEP PHYSICAL AGENT MONITORING RECORDS**  
**(NOES 1981-1983)**



NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-25

AVERAGE NUMBER OF YEARS FACILITIES KEEP PHYSICAL AGENT MONITORING RECORDS AMONG PLANTS NOT REPORTING "FOREVER"

MAJOR GROUP	PLANT SIZE			ALL
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	
07	6* (4)	...	...	6* (4)
13	7* (3)	...	...	7* (3)
15-17	4* (3)	<1	...	2* (2)
20-39	6* (2)	8 (2)	19 (3)	9 (1)
40-49	2* (1)	6* (4)	21* (13)	4* (3)
50-59	...	5* (3)	...	<1
70-79	...	46* (35)	...	46* (35)
80	3* (2)	4 (1)	9 (2)	6 (1)
ALL	5 (1)	8 (2)	15 (2)	8 (1)

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

## AVERAGE NUMBER OF YEARS FACILITIES KEEP PHYSICAL AGENT MONITORING RECORDS AMONG PLANTS NOT REPORTING "FOREVER"

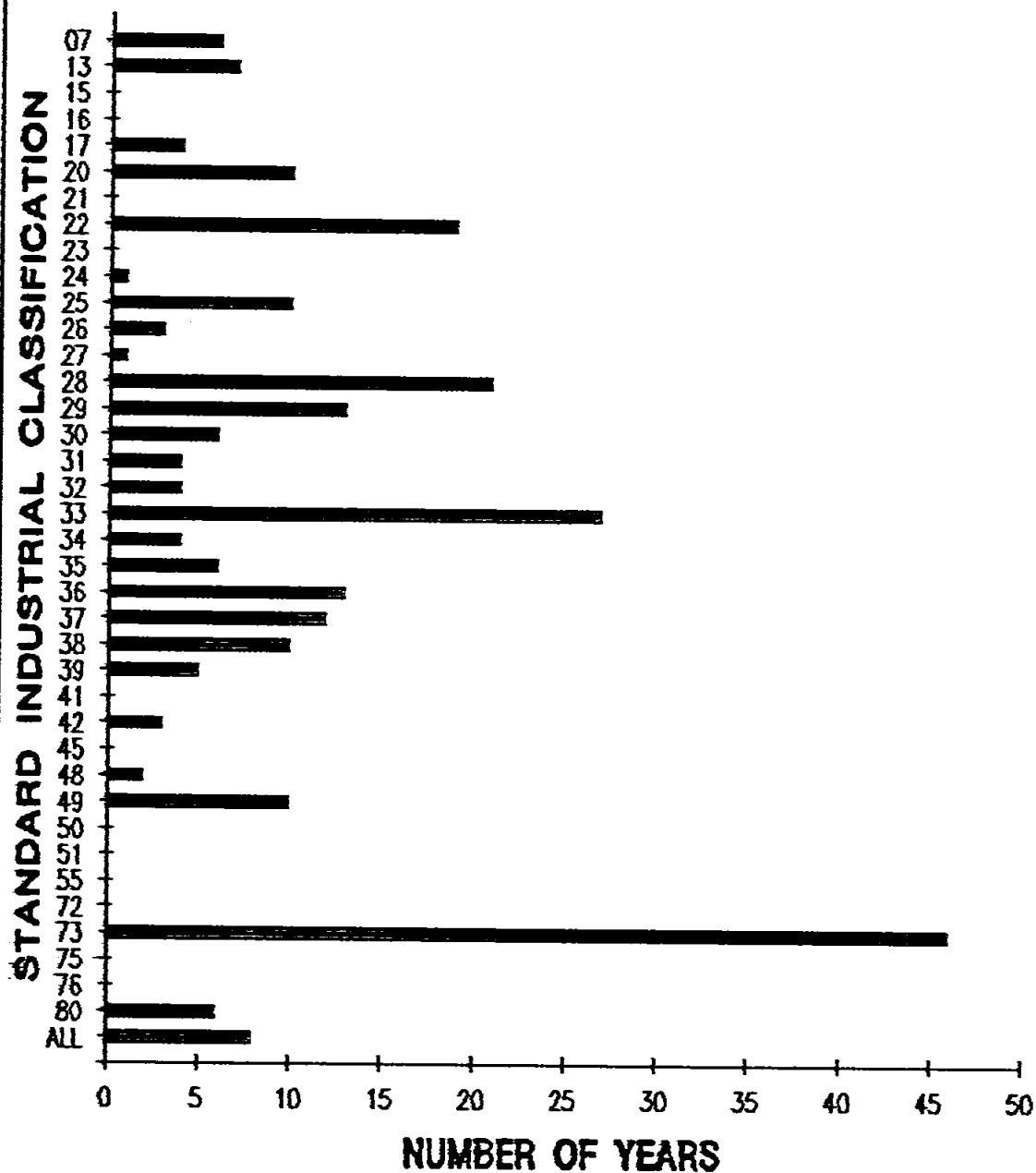
SIC CODE	PLANT SIZE			ALL
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	
07	6* (4)	...	...	6* (4)
13	7* (3)	...	...	7* (3)
15	...	1* (2)	...	<1
16	...	...	...	...
17	5* (4)	...	...	4* (3)
20	13* (7)	8* (2)	19* (14)	10* (3)
21	...	...	...	...
22	30* (22)	11* (9)	28 (4)	19* (8)
23	...	...	...	...
24	1* (≥.25)	2* (2)	...	1* (2)
25	...	...	10* (7)	10* (7)
26	...	3* (1)	2* (1)	3* (1)
27	...	3* (2)	15* (9)	1* (6)
28	...	5* (3)	42* (19)	21* (7)
29	...	14* (13)	5 (<.5)	13* (9)
30	3* (8)	8* (9)	15* (8)	6* (6)
31	4* (3)	...	...	4* (3)
32	2* (1)	7* (4)	...	4* (2)
33	37* (18)	12* (9)	11* (16)	27* (11)



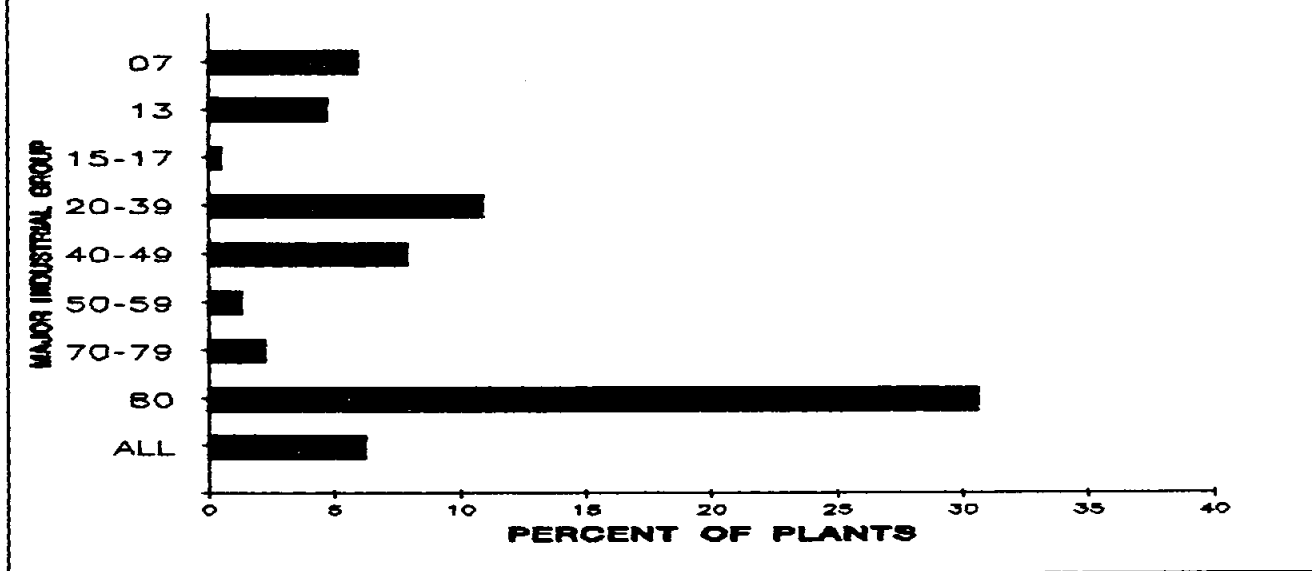
SIC CODE	PLANT SIZE			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	ALL
34	1* (1)	8* (5)	5* (2)	4* (1)
35	5* (3)	5* (3)	17* (6)	6* (2)
36	6* (7)	20* (11)	16* (9)	13* (6)
37	...	6* (8)	24 (5)	12* (7)
38	7* (5)	29* (18)	7* (3)	10* (5)
39	...	2* (1)	30* (21)	5* (4)
41	...	...	...	...
42	3* (2)	...	10* (7)	3* (4)
45	...	...	...	...
48	1* (1)	...	5* (4)	2* (2)
49	5* (4)	...	30* (21)	10* (12)
50	...	5* (3)	...	<1
51	...	...	...	...
55	...	...	...	...
72	...	...	...	...
73	...	46* (35)	...	46* (35)
75	...	...	...	...
76	...	...	...	...
80	3* (2)	4 (1)	9 (2)	6 (1)
ALL	5 (1)	8 (2)	15 (2)	8 (1)

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE IV - 26**  
**AVERAGE NUMBER OF "NON-FOREVER" YEARS PLANTS**  
**KEEP PHYSICAL AGENT MONITORING RECORDS**  
**(NOES 1981-1983)**



**FIGURE IV - 27**  
**PROPORTION OF PLANTS WHICH KEEP PHYSICAL**  
**AGENT MONITORING RECORDS "FOREVER"**  
**(NOES 1981-1983)**



NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-27

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 KEEP PHYSICAL AGENT MONITORING RECORDS "FOREVER"

MAJOR GROUP	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	339* (336) 6.1%	...	...	339* (336) 6.0%	5763* (5713) 5.6%	...	...	5763* (5713) 5.2%
13	187* (189) 2.2%	272* (180) 26.7%	...	459* (231) 4.8%	2622* (2651) 1.3%	44654* (22314) 25.7%	...	47275* (21944) 11.4%
15-17	353* (234) .4%	203* (125) 4.9%	12* (6) 4.9%	568* (260) .6%	13953* (8855) .7%	24577* (13747) 3.3%	38023* (20661) 16.1%	76554* (23382) 2.5%
20-39	8475 (1161) 5.5%	8827 (887) 27.8%	3669 (242) 58.5%	20971 (1574) 11.0%	390548 (49761) 8.5%	2038763 (216204) 32.0%	5434926 (258781) 65.8%	7864237 (403672) 40.8%
40-49	3866* (1130) 7.3%	681* (269) 11.7%	188* (77) 40.2%	4735 (1167) 8.0%	148613* (42478) 10.4%	137715* (53173) 11.9%	278176* (82455) 48.5%	564504 (105023) 17.9%
50-59	421* (420) .7%	423* (242) 0.9%	...	844* (508) 1.4%	10447* (10095) .9%	80445* (52522) 19.7%	...	90892* (54775) 5.9%
70-79	1402* (597) 1.9%	215* (89) 9.2%	141* (108) 39.9%	1758* (605) 2.3%	29585* (12208) 2.1%	62030* (20770) 13.4%	170403* (97285) 50.2%	262018* (100357) 11.9%
80	251* (135) 8.8%	918 (220) 42.4%	998 (121) 48.4%	2167 (251) 30.7%	9581* (5578) 9.4%	242844 (59590) 45.4%	1530113 (202790) 50.6%	1782538 (199784) 48.7%
ALL	15294 (1838) 3.4%	11540 (1011) 23.1%	5007 (301) 53.0%	31841 (2182) 6.3%	611112 (68415) 5.5%	2631027 (238746) 26.7%	7451642 (353245) 59.8%	10693781 (477522) 32.0%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
KEEP PHYSICAL AGENT MONITORING RECORDS "FOREVER"

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	339* (336) 6.1%	...	...	339* (336) 6.0%	5763* (5713) 5.6%	...	...	5763* (5713) 5.2%
13	187* (189) 2.2%	272* (180) 26.7%	...	459* (231) 4.8%	2622* (2651) 1.3%	44654* (22314) 25.7%	...	47275* (21944) 11.4%
15	233* (215) .9%	...	8* (5) 6.2%	241* (215) .9%	7445* (6875) 1.3%	...	32925* (20856) 24.4%	40370* (22044) 4.5%
16	64* (68) .6%	185* (126) 16.5%	3* (4) 3.2%	253* (134) 2.0%	4889* (5177) 1.7%	21339* (13700) 10.3%	5099* (5479) 5.0%	31326* (12864) 5.3%
17	56* (62) .1%	18* (26) .9%	...	74* (68) .1%	1619* (1619) .1%	3238* (4637) 1.0%	...	4857* (5083) .3%
20	1083* (385) 9.5%	1085 (201) 33.7%	379* (131) 67.8%	2547 (470) 16.8%	44599* (14212) 11.5%	259701 (58005) 38.5%	356988* (107090) 72.6%	661289 (120104) 42.6%
21	30* (43) 100.0%	...	54* (34) 68.0%	84* (48) 77.1%	1866* (2685) 100.0%	...	98088* (66468) 87.5%	99954* (65783) 87.7%
22	69* (64) 2.4%	492* (170) 31.0%	173* (80) 57.7%	734* (223) 15.2%	4952* (4303) 4.7%	143679* (49648) 41.4%	140403* (79991) 53.8%	289034* (104521) 40.5%
23	49* (59) .4%	184* (85) 5.9%	47* (41) 19.4%	280* (100) 1.8%	2433* (2928) .6%	43542* (28416) 7.1%	47062* (40984) 22.6%	93037* (43973) 7.5%
24	1078* (408) 10.1%	567* (155) 49.4%	104* (74) 100.0%	1749 (398) 14.6%	43077* (14111) 14.2%	95774* (26840) 52.2%	92355* (52501) 100.0%	231205* (63582) 39.9%
25	195* (154) 4.7%	97* (84) 9.1%	85* (74) 71.7%	377* (201) 7.1%	7554* (6683) 5.4%	30322* (26175) 11.8%	90475* (62473) 73.6%	128352* (65236) 24.8%
26	319* (153) 7.7%	458* (149) 29.2%	163* (81) 76.2%	940 (222) 15.9%	26051* (12080) 18.9%	102317* (36529) 36.4%	176090* (64679) 85.1%	304458 (73908) 48.6%
27	709* (234) 3.9%	441* (128) 23.5%	191* (73) 60.4%	1341 (320) 6.6%	26200* (11083) 5.5%	82646* (25634) 22.9%	231142* (57925) 66.9%	339987 (63951) 28.7%
28	1105* (365) 17.9%	519 (107) 44.7%	221* (65) 58.1%	1845 (444) 23.9%	41582* (13169) 23.0%	132889 (30622) 50.9%	310950* (116079) 65.3%	485421* (124801) 52.9%
29	...	203* (115) 69.3%	87* (38) 86.5%	291* (129) 20.7%	...	44393* (16813) 70.2%	77880* (33613) 66.3%	122273* (42064) 55.1%
30	370* (177) 5.5%	369* (213) 24.0%	98* (75) 43.6%	837* (297) 9.9%	19930* (9545) 8.9%	92887* (46784) 31.5%	98363* (70009) 42.1%	211180* (87230) 28.0%
31	...	101* (57) 17.8%	...	101* (57) 6.6%	...	23806* (13298) 17.6%	...	23806* (13298) 13.5%
32	501* (315) 5.7%	515* (139) 50.9%	184* (71) 99.9%	1199* (340) 12.0%	21211* (11403) 8.9%	95738 (23045) 45.8%	128993* (49687) 100.0%	245943 (51735) 42.8%
33	542* (183) 13.1%	672* (189) 45.7%	248 (60) 73.5%	1461 (314) 24.6%	31471* (12497) 22.7%	140365* (41731) 45.1%	441631 (59494) 71.1%	613467 (71440) 57.3%

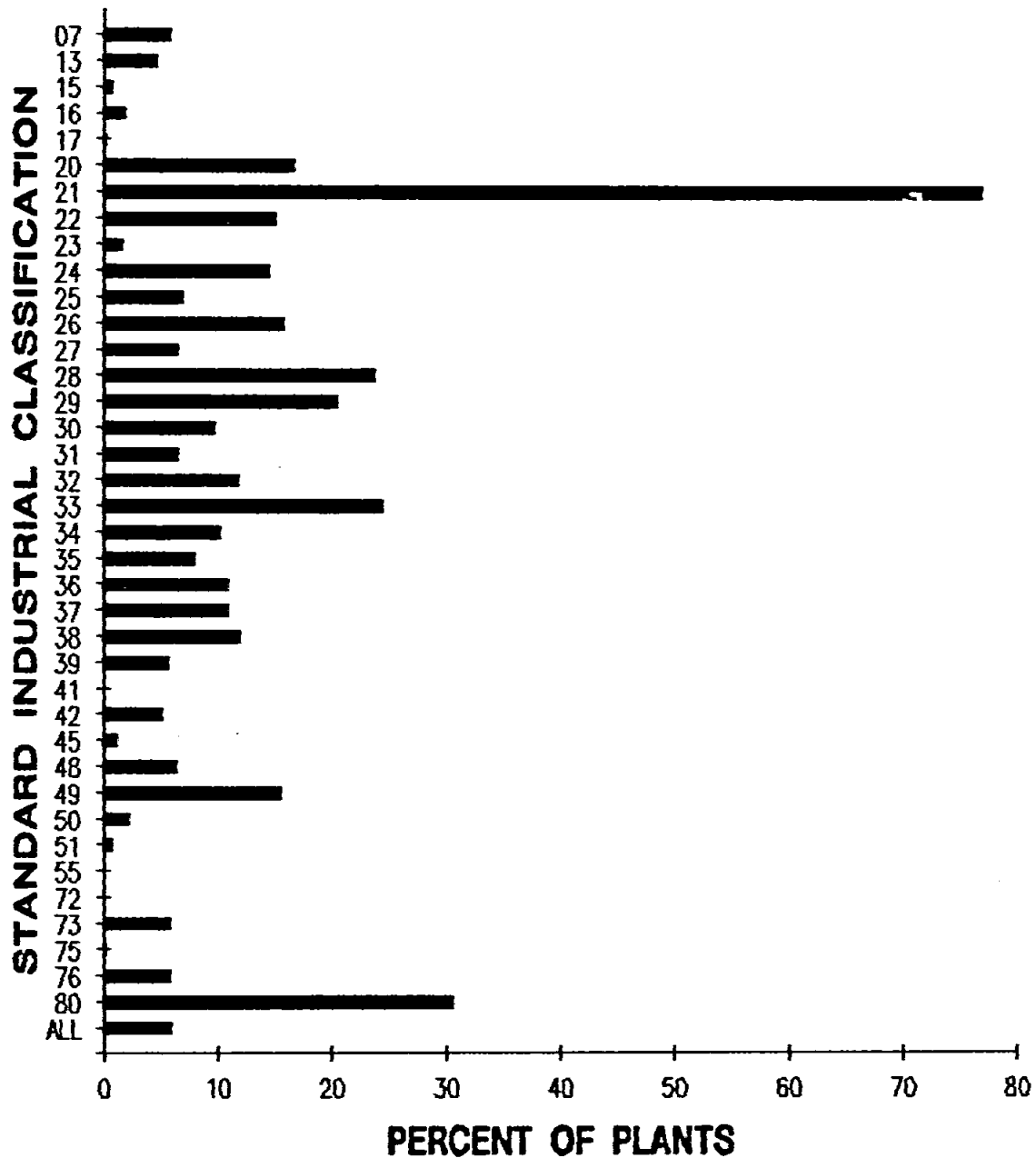
## NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983)

## TABLE NO. IV-28 (CONTINUED)

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	1012 (228) 5.5%	1066 (168) 34.2%	189* (66) 54.6%	2268 (288) 10.3%	53994* (13679) 9.7%	251810 (35979) 42.2%	208113* (97850) 59.3%	513917 (103507) 34.2%
35	777* (353) 3.4%	890 (177) 26.1%	525 (92) 66.9%	2191 (366) 8.2%	29944* (10400) 4.9%	242914 (38982) 36.7%	708178 (97490) 63.6%	981036 (108290) 41.2%
36	143* (106) 2.0%	553* (153) 20.6%	474 (93) 60.2%	1169 (216) 11.1%	11622* (8727) 5.0%	128075* (36877) 23.2%	872313 (150236) 73.8%	1012010 (165028) 51.5%
37	142* (118) 3.6%	226* (96) 19.0%	248* (77) 59.6%	616* (201) 11.0%	8955* (7379) 7.1%	40808* (21197) 17.1%	1064852 (180812) 70.3%	1114616 (190738) 59.3%
38	135* (85) 5.0%	167* (98) 17.4%	190* (86) 45.7%	492* (183) 12.1%	3724* (2473) 3.6%	35721* (23650) 18.4%	271586* (106384) 59.0%	311031* (107659) 41.0%
39	218* (155) 3.3%	222* (519) 27.8%	10* (10) 3.0%	450* (533) 5.8%	11380* (8305) 6.9%	51378* (126887) 34.4%	19466* (18968) 9.3%	82223* (122438) 15.7%
41	...	...	...	...	...	...	...	...
42	1108* (497) 5.5%	...	44* (36) 53.9%	1153* (490) 5.3%	37236* (13976) 7.6%	...	50920* (44164) 68.0%	88155* (40400) 10.7%
45	...	...	51* (27) 35.0%	51* (27) 1.3%	...	...	109226* (58968) 41.3%	109226* (58968) 24.2%
48	1011* (777) 6.9%	5* (5) .6%	3* (4) 10.1%	1019* (776) 6.5%	25227* (17661) 5.9%	1043* (945) .6%	13226* (14092) 18.9%	39496* (21913) 5.9%
49	840* (465) 10.2%	676* (269) 36.3%	89* (74) 51.5%	1605* (591) 15.7%	62279* (36473) 23.1%	136672* (53007) 32.1%	104805* (55062) 71.5%	303755* (94876) 36.1%
50	348* (416) 1.1%	423* (242) 23.5%	...	771* (504) 2.4%	8552* (9990) 1.4%	80445* (52522) 28.4%	...	88996* (54640) 9.7%
51	73* (66) .8%	...	...	73* (66) .8%	1896* (1708) 1.0%	...	...	1896* (1708) .9%
55	...	...	...	...	...	...	...	...
72	...	...	...	...	...	...	...	...
73	805* (370) 4.9%	156* (62) 10.5%	141* (108) 41.4%	1103* (394) 6.0%	20913* (8150) 5.0%	53792* (18790) 15.4%	170403* (97285) 51.8%	245108* (97603) 22.3%
75	...	59* (60) 99.7%	...	59* (60) .2%	...	8238* (8380) 100.0%	...	8238* (8380) 2.0%
76	597* (523) 6.1%	...	...	597* (523) 6.0%	8672* (8395) 4.9%	...	...	8672* (8395) 4.3%
80	251* (135) 8.8%	918 (220) 42.4%	998 (121) 48.4%	2167 (251) 30.7%	9581* (5578) 9.4%	242844 (59590) 45.4%	1530113 (202790) 50.6%	1782538 (199784) 48.7%
ALL	14387 (1546) 3.2%	11540 (810) 23.3%	5007 (270) 53.1%	30934 (1739) 6.1%	587241 (61497) 5.3%	2631027 (195342) 26.9%	7451642 (312732) 59.8%	10669910 (409507) 32.1%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE IV - 28**  
**PROPORTION OF PLANTS WHICH KEEP PHYSICAL**  
**AGENT MONITORING RECORDS "FOREVER"**  
**(NOES 1981-1983)**



**NOES QUESTIONNAIRE ITEM NO. 34**  
**Existence of a Program to Regularly Monitor Fumes and Gases**

**Intent**

The intent of this question was to determine if the facility had a program to regularly or periodically monitor the environmental levels of chemical materials in fume, gas, mist, vapor or dust form.

This item was displayed on the questionnaire as:

34. Do you have a program under which you regularly or periodically monitor the presence of fumes, gases, mists, dusts, or vapors?

- 1 Yes
- 2 No (Skip to Question 38)

**Notes**

"To regularly or periodically monitor" refers to programs within the facility which were established to monitor environmental levels of chemical materials on a planned or predictable basis.

Tests using instrumentation or monitoring by outside sources are included if the intent was to protect worker health and the monitoring was performed at the request of management.

Monitoring of process conditions, irregular or one-time monitoring, or any monitoring not performed under an occupational health rationale was not included as a positive response.

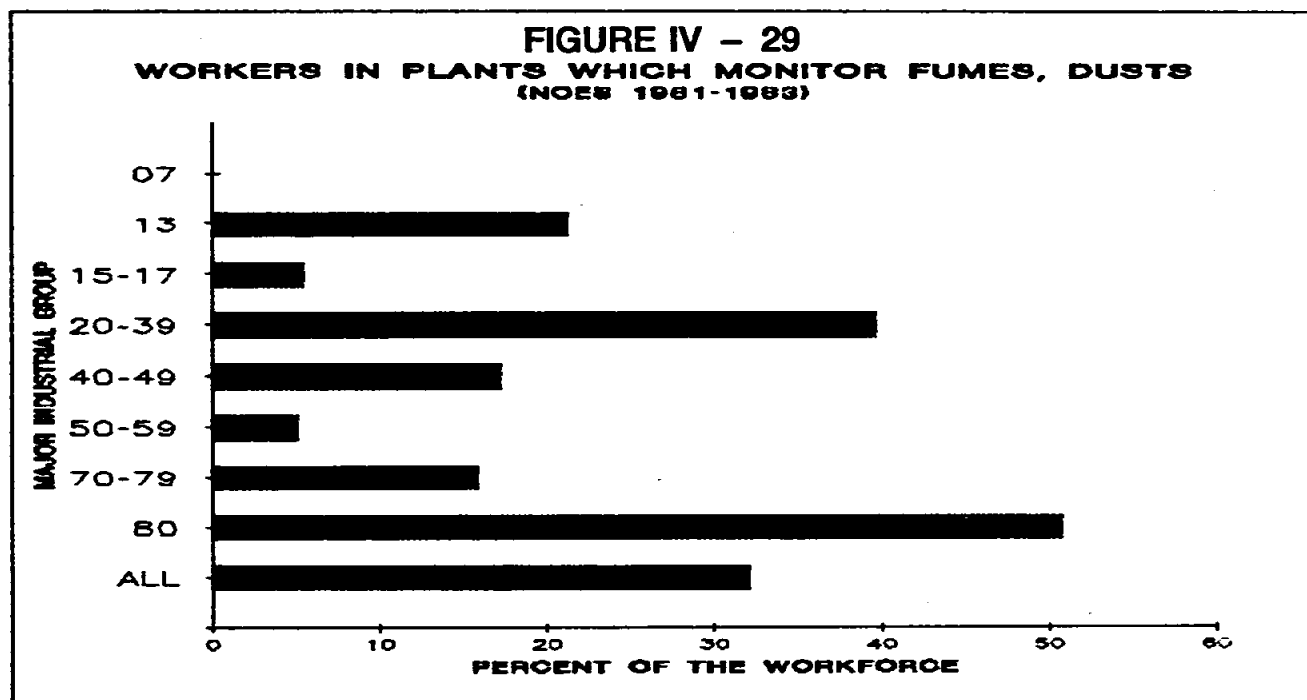
**Analysis**

One analysis of the responses to question 34 is presented.

**Response 34.1 - Regular or periodic monitoring of chemical materials**

The estimates of the plants which have established programs for the regular or periodic monitoring of the environmental levels of chemical materials in fume, gas, mist, dust or vapor form, and workers in those plants (by number and proportion of the total) are displayed in Figures IV-29, IV-30, and IV-31, and Tables IV-29 and IV-30.

Figure IV-29	Workers in plants which monitor fumes, dusts (by major industrial group)
Figure IV-30	Workers in plants which monitor fumes, dusts (by 2-digit SIC)
Figure IV-31	Plants which monitor fumes, gases, mists, dusts or vapors
Table IV-29	Number and percent of plants and employees in plants which regularly monitor fumes, gases, mists, dusts, or vapors (by major industrial group)
Table IV-30	Number and percent of plants and employees in plants which regularly monitor fumes, gases, mists, dusts, or vapors (by 2-digit SIC)



NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-29

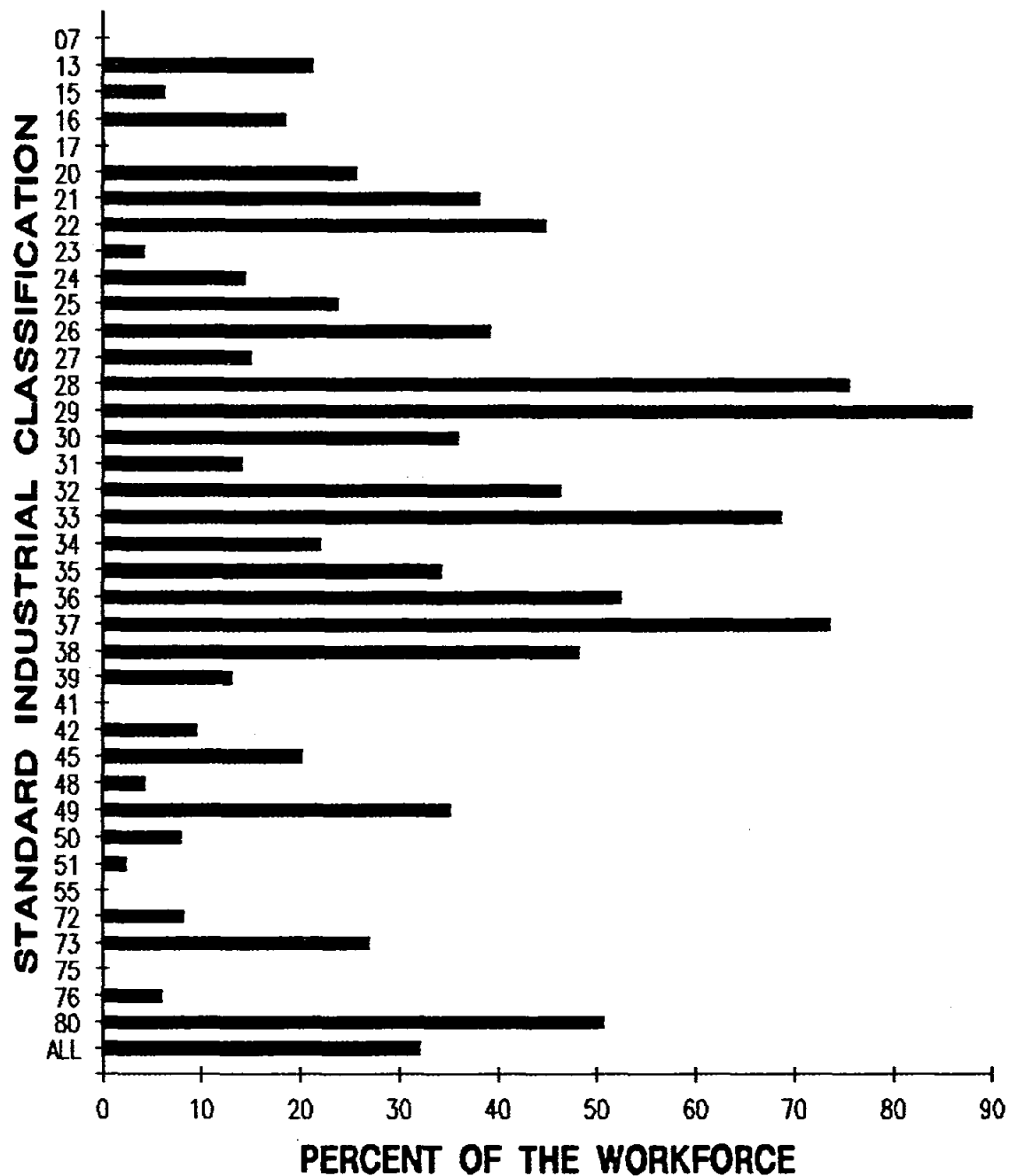
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
REGULARLY MONITOR FUMES, GASES, MISTS, DUSTS, OR VAPORS

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	...	...	...	...	...	...	...	...
13	474* (253) 5.5%	356* (199) 34.9%	...	830* (316) 8.6%	13091* (5054) 6.3%	75739* (41099) 43.5%	...	88830* (41502) 21.4%
15-17	1042* (533) 1.1%	380* (215) 9.2%	59* (49) 24.3%	1481* (587) 1.5%	28627* (14485) 1.4%	69013* (42473) 9.4%	75730* (40749) 32.1%	173369* (59848) 5.6%
20-39	6327 (736) 4.1%	6607 (637) 20.8%	3605 (237) 57.5%	16539 (1038) 8.6%	289311 (35243) 6.3%	1487543 (157330) 23.3%	5891358 (265747) 71.3%	7668212 (335770) 39.8%
40-49	4495* (1251) 8.5%	898* (298) 15.4%	180* (71) 38.4%	5573 (1329) 9.4%	156389* (47737) 10.9%	182189* (60336) 15.8%	211945* (78791) 36.9%	550522 (114456) 17.4%
50-59	740* (499) 1.3%	244* (174) 9.2%	...	984* (518) 1.6%	20942* (14492) 1.9%	58583* (46012) 14.3%	...	79525* (47653) 5.2%
70-79	3150* (1251) 4.3%	363 (89) 15.5%	159* (110) 44.8%	3672* (1259) 4.8%	77942* (33209) 5.6%	96222* (26720) 20.7%	176712* (98820) 52.0%	350876* (98594) 16.0%
80	228* (234) 8.0%	629* (177) 29.0%	1095 (193) 53.1%	1952 (370) 27.6%	10924* (11242) 10.7%	156491* (43831) 29.3%	1693115 (303657) 56.0%	1860530 (304263) 50.9%
ALL	16456 (2080) 3.7%	9478 (806) 19.0%	5097 (336) 54.0%	31031 (2297) 6.1%	597225 (72080) 5.4%	2125780 (191412) 21.6%	8048860 (424809) 64.6%	10771866 (485503) 32.2%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
...No facilities observed.



**FIGURE IV - 30**  
**WORKERS IN PLANTS WHICH MONITOR FUMES, DUSTS**  
**(NOES 1981-1983)**



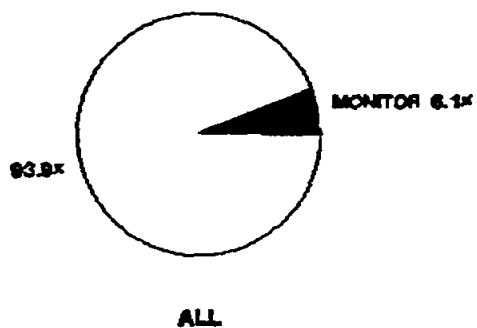
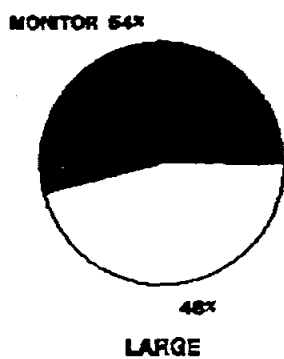
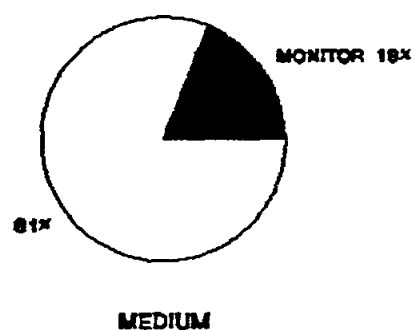
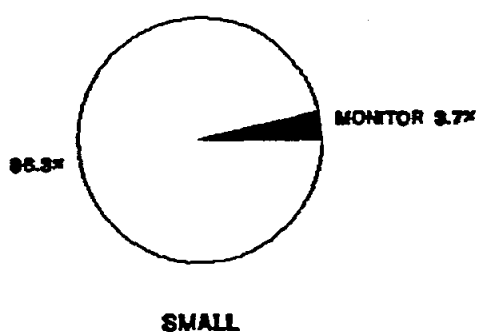
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
REGULARLY MONITOR FUMES, GASES, MISTS, DUSTS, OR VAPORS

SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	...	...	...	...	...	...	...	...
13	474* (253) 5.5%	356* (199) 34.9%	...	830* (316) 8.6%	13091* (5054) 6.3%	75739* (41099) 43.5%	...	88830* (41502) 21.4%
15	233* (215) .9%	23* (17) 2.0%	24* (17) 17.4%	279* (216) 1.1%	7445* (6875) 1.3%	5446* (4078) 2.7%	45022* (22458) 33.4%	57912* (25728) 6.5%
16	478* (290) 4.2%	357* (211) 31.9%	35* (46) 33.0%	870* (386) 7.0%	16735* (10238) 5.9%	63567* (41390) 30.6%	30708* (28882) 30.3%	111010* (46280) 18.7%
17	332* (326) .6%	...	...	332* (326) .6%	4446* (4058) .4%	...	...	4446* (4058) .3%
20	257* (115) 2.3%	635 (149) 19.7%	255* (85) 45.6%	1147 (232) 7.6%	9976* (5285) 2.6%	144175 (32987) 21.4%	248011* (76953) 50.4%	402162 (91418) 25.9%
21	30* (43) 100.0%	...	11* (11) 13.5%	41* (42) 37.6%	1866* (2685) 100.0%	...	41763* (36135) 37.2%	43629* (35411) 38.3%
22	...	452* (149) 28.4%	217* (80) 72.5%	669 (130) 13.9%	...	114860* (39679) 33.1%	206738* (93673) 79.2%	321597* (90486) 45.0%
23	...	68* (52) 2.2%	47* (41) 19.4%	115* (72) 7%	...	7223* (5471) 1.2%	47062* (40984) 22.6%	54285* (42381) 4.4%
24	175* (182) 1.6%	267* (137) 23.2%	19* (8) 18.1%	461* (200) 3.9%	8023* (7237) 2.6%	40970* (20506) 22.3%	35767* (18789) 38.7%	84760* (29875) 14.6%
25	48* (74) 1.1%	41* (47) 3.9%	103* (74) 86.4%	192* (110) 3.6%	3348* (5195) 2.4%	15227* (17916) 5.9%	105781* (63252) 86.0%	124356* (64943) 24.0%
26	184* (136) 4.5%	322* (142) 20.5%	144* (81) 67.1%	650* (255) 11.0%	15793* (11419) 11.5%	73044* (36627) 26.0%	157510* (70364) 76.1%	246346* (94993) 39.4%
27	384* (230) 2.1%	166* (84) 8.8%	95* (51) 30.1%	645* (281) 3.2%	19205* (12304) 4.0%	36029* (18723) 10.0%	125146* (54341) 36.2%	180379* (60542) 15.2%
28	1517* (406) 24.6%	748 (107) 64.5%	362 (68) 95.2%	2627 (476) 34.1%	56079* (14265) 31.0%	176339 (31301) 67.6%	463536 (103708) 97.3%	695953 (116614) 75.8%
29	249* (178) 24.6%	264* (124) 90.1%	101* (42) 100.0%	614* (242) 43.7%	17737* (11943) 43.3%	60212* (21521) 95.2%	117545* (70259) 100.0%	195494* (80191) 88.1%
30	348* (160) 5.2%	310* (169) 20.2%	170* (76) 75.8%	828* (226) 9.8%	19456* (8708) 8.6%	69230* (38315) 23.5%	183349* (74106) 78.5%	272036* (72611) 36.1%
31	...	100* (67) 17.6%	...	100* (67) 6.6%	...	24942* (17459) 18.4%	...	24942* (17459) 14.2%
32	354* (188) 4.0%	540* (147) 53.4%	184* (71) 99.9%	1078 (246) 10.8%	17707* (9932) 7.5%	121519* (35669) 58.1%	128993* (49687) 100.0%	268218 (59619) 46.6%
33	623* (204) 15.1%	531* (145) 36.2%	288 (59) 85.5%	1441 (301) 24.3%	39863* (12365) 28.8%	120308* (34403) 38.7%	577009 (83620) 92.8%	737179 (95171) 68.8%

SIC CODE	EMPLOYEES				EMPLOYEES			
	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	995* (423) 5.4%	725 (153) 23.2%	173* (58) 49.9%	1893* (524) 8.6%	33117* (13342) 6.0%	137249 (31726) 23.0%	163430* (72591) 46.6%	333796 (82466) 22.2%
35	100* (79) .4%	454* (165) 13.3%	349 (61) 44.5%	903 (193) 3.4%	6753* (5105) 1.1%	122833* (43560) 18.6%	692370 (108541) 62.2%	821956 (114221) 34.5%
36	189* (118) 2.7%	444* (139) 16.5%	509* (129) 64.7%	1143 (273) 10.8%	11709* (7568) 5.1%	101408* (34683) 18.3%	923062 (162589) 78.1%	1036179 (180063) 52.7%
37	274* (155) 6.9%	304* (129) 25.5%	297* (83) 71.4%	875 (214) 15.7%	10981* (6313) 8.6%	70652* (34404) 29.5%	1306819 (229785) 86.3%	1388452 (222273) 73.8%
38	207* (176) 7.7%	64* (45) 6.7%	263* (107) 63.2%	534* (190) 13.2%	8423* (6305) 8.1%	16922* (12960) 8.7%	342003* (122988) 74.3%	367348* (122946) 48.4%
39	392* (233) 6.0%	171* (410) 21.5%	20* (17) 6.0%	584* (467) 7.6%	9275* (6281) 5.6%	34402* (80201) 23.0%	25466* (19911) 12.2%	69143* (80306) 13.2%
41	...	...	...	...	...	...	...	...
42	961* (497) 4.8%	90* (65) 6.1%	25* (26) 30.7%	1076* (490) 5.0%	41573* (26061) 8.5%	18369* (13754) 7.1%	20111* (20857) 26.9%	80053* (28647) 9.7%
45	...	...	30* (20) 20.5%	30* (20) .8%	...	...	91952* (58422) 34.8%	91952* (58422) 20.4%
48	751* (722) 5.1%	5* (5) .6%	3* (4) 10.1%	760* (722) 4.9%	16143* (14712) 3.8%	1043* (945) .6%	13226* (14092) 18.9%	30412* (19386) 4.5%
49	1953* (870) 23.8%	600* (240) 32.2%	121* (67) 70.0%	2674* (915) 26.1%	80970* (40988) 30.1%	129133* (51071) 30.4%	86656* (49101) 59.1%	296758* (84773) 35.3%
50	446* (435) 1.5%	244* (174) 13.6%	...	690* (469) 2.1%	15730* (13929) 2.5%	58583* (46012) 20.7%	...	74313* (47886) 8.1%
51	294* (234) 3.2%	...	...	294* (234) 3.1%	5211* (3790) 2.8%	...	...	5211* (3790) 2.5%
55	...	...	...	...	...	...	...	...
72	1760* (860) 8.5%	48* (48) 7.1%	...	1808* (861) 8.5%	33729* (17507) 8.9%	6003* (6025) 7.3%	...	39732* (18389) 8.4%
73	1390* (698) 8.4%	279* (98) 18.7%	159* (110) 46.6%	1828* (722) 9.9%	44212* (25826) 10.5%	77547* (25122) 22.2%	176712* (98820) 53.7%	298472* (100984) 27.1%
75	...	...	...	...	...	...	...	...
76	...	36* (45) 29.4%	...	36* (45) .4%	...	12672* (15755) 52.1%	...	12672* (15755) 6.2%
80	228* (234) 8.0%	629* (177) 29.0%	1095 (193) 53.1%	1952 (370) 27.6%	10924* (11242) 10.7%	156491* (43831) 29.3%	1693115 (303657) 56.0%	1860530 (304263) 50.9%
A11	15625 (1709) 3.5%	9275 (645) 18.7%	5097 (295) 54.1%	29997 (1847) 5.9%	579522 (55088) 5.3%	2092136 (156967) 21.4%	8048860 (388798) 64.6%	10720519 (434097) 32.2%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE IV - 31**  
**PLANTS WHICH MONITOR FUMES, GASES,**  
**MISTS, DUSTS, OR VAPORS**  
**(NOES 1981-1983)**



**NOES QUESTIONNAIRE ITEM NO. 35**  
**Methods of Fume and Gas Monitoring**

**Intent**

The intent of this question was to generally categorize the methods used in monitoring fumes, gases, mists, dusts, or vapors.

This item was displayed on the questionnaire as:

35. How is this monitoring conducted?

- 1 Sample collection with laboratory analysis (Skip to Question 37)
- 2 Direct reading instruments
- 3 Both

**Notes**

This question was asked only if the interviewee had indicated the existence of a regular monitoring program within the facility, and the response had met the conditions specified in the discussion of question 34.

**Analysis**

One analysis of the responses to question 35 is presented.

Responses 35.1, 35.2, or 35.3 - Fume monitoring methods

The estimates of the plants which utilize sample collection with laboratory analysis, or direct reading instruments, or both methods in their monitoring of environmental levels of chemical materials, and workers in those plants (by number and proportion of the total) are displayed in Figure IV-32 and Tables IV-31 and IV-32.

Figure IV-32	Fume monitoring methods by plants and workers in plants
Table IV-31	Number and percent of plants and employees in plants which monitor fumes, gases, mists, dusts and vapors by method (by major industrial group)
Table IV-32	Number and percent of plants and employees in plants which monitor fumes, gases, mists, dusts and vapors by method (by 2-digit SIC)

NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-31

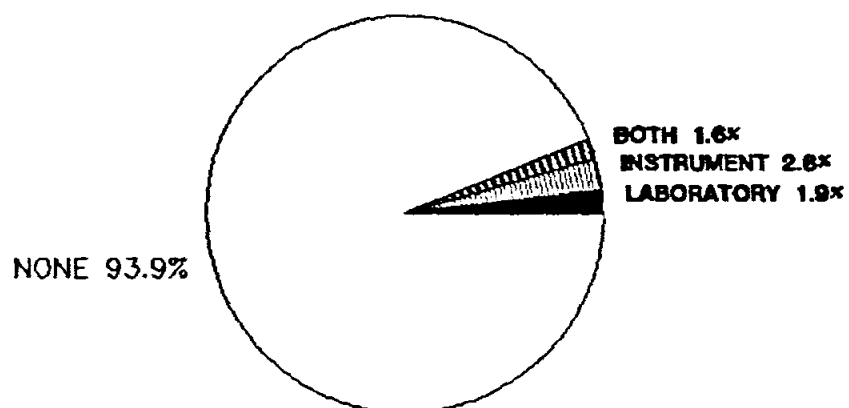
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
MONITOR FUMES WITH LABORATORY ANALYSIS

MAJOR GROUP	PLANTS			EMPLOYEES		
	COLLECTION	INSTRUMENTS	BOTH	COLLECTION	INSTRUMENTS	BOTH
07	...	...	...	...	...	...
13	208* (193) 2.2%	425* (175) 4.4%	197* (156) 2.0%	2914* (2707) .7%	66805* (31100) 16.1%	19112* (11903) 4.6%
15-17	98* (113) .1%	990* (470) 1.0%	394* (236) .4%	9792* (11291) .3%	113240* (42046) 3.7%	50336* (27961) 1.6%
20-39	6888 (759) 3.6%	4459 (758) 2.3%	5191 (579) 2.7%	2216908 (269495) 11.5%	1056854 (169371) 5.5%	4394450 (305937) 22.8%
40-49	821* (411) 1.4%	3407* (1193) 5.7%	1345* (761) 2.3%	180843* (88319) 5.7%	245756* (74885) 7.8%	123924* (34726) 3.9%
50-59	541* (419) .9%	319* (271) .5%	124* (141) .2%	31930* (16225) 2.1%	10494* (10691) .7%	37100* (42248) 2.4%
70-79	283* (193) .4%	2901* (1212) 3.8%	488* (310) .6%	67875* (21220) 3.1%	118049* (42591) 5.4%	164952* (81546) 7.5%
80	842* (322) 11.9%	655 (118) 9.3%	454* (147) 6.4%	601223* (209825) 16.4%	807959 (147691) 22.1%	451348* (125802) 12.3%
ALL	9682 (1054) 1.9%	13157 (1951) 2.6%	8193 (1064) 1.6%	3111486 (353981) 9.3%	2419157 (246516) 7.2%	5241222 (346392) 15.7%

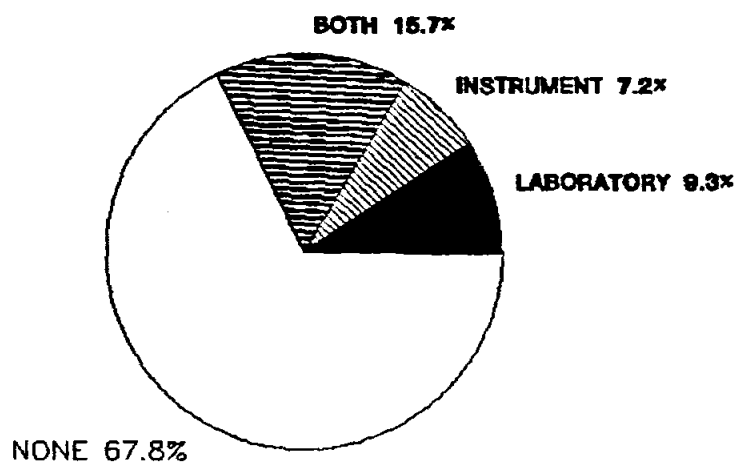
\*Standard error >25% of the estimate. The estimate may be unreliable.

...No facilities observed.

**FIGURE IV - 32**  
**FUME MONITORING METHODS BY PLANTS**  
**AND WORKERS IN PLANTS**  
**(NOES 1981-1983)**



**PLANTS**



**WORKERS**

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
MONITOR FUMES WITH LABORATORY ANALYSIS

SIC CODE	PLANTS			EMPLOYEES		
	COLLECTION	INSTRUMENTS	BOTH	COLLECTION	INSTRUMENTS	BOTH
07	...	...	...	...	...	...
13	208* (193) 2.2%	425* (175) 4.4%	197* (156) 2.0%	2914* (2707) .7%	66805* (31100) 16.1%	19112* (11903) 4.6%
15	...	26* (17) .1%	253* (216) 1.0%	...	27204* (17594) 3.0%	30708* (23271) 3.4%
16	98* (113) .8%	640* (306) 5.1%	133* (90) 1.1%	9792* (11291) 1.7%	82147* (38197) 13.9%	19071* (12961) 3.2%
17	...	324* (324) .5%	8* (10) .0%	...	3889* (3892) .2%	557* (729) .0%
20	227* (88) 1.5%	707* (216) 4.7%	212* (98) 1.4%	26453* (24390) 1.7%	257553* (75704) 16.6%	118156* (56225) 7.6%
21	26* (42) 23.8%	...	15* (8) 13.8%	1608* (2605) 1.4%	...	42021* (35930) 36.9%
22	539 (102) 11.2%	88* (52) 1.8%	41* (24) .9%	227349* (56959) 31.8%	29214* (21008) 4.1%	65034* (45716) 9.1%
23	115* (72) .7%	...	...	54285* (42381) 4.4%	...	...
24	202* (190) 1.7%	110* (101) .9%	149* (91) 1.2%	18795* (13467) 3.2%	12859* (11839) 2.2%	53106* (23947) 9.2%
25	117* (92) 2.2%	74* (70) 1.4%	...	46596* (29489) 9.0%	77760* (59575) 15.0%	...
26	385* (160) 6.5%	130* (105) 2.2%	134* (72) 2.3%	55043* (18097) 8.8%	57030* (39977) 9.1%	134273* (59277) 21.4%
27	115* (68) .6%	324* (228) 1.6%	205* (125) 1.0%	36577* (20860) 3.1%	27218* (19249) 2.3%	116584* (51771) 9.8%
28	594* (262) 7.7%	607* (252) 7.9%	1426* (428) 18.5%	209631* (61497) 22.8%	43022* (14261) 4.7%	443300 (78160) 48.3%
29	83* (120) 5.9%	350* (204) 24.9%	182* (54) 12.9%	9614* (13951) 4.3%	46678* (23003) 21.0%	139202* (70583) 62.8%
30	386* (132) 4.6%	106* (91) 1.3%	336* (155) 4.0%	96708* (40269) 12.8%	21120* (16642) 2.8%	154208* (80294) 20.5%
31	33* (35) 2.1%	35* (37) 2.3%	32* (38) 2.1%	9755* (10480) 5.5%	4706* (4963) 2.7%	10482* (12234) 6.0%
32	677* (232) 6.8%	32* (37) .3%	370* (138) 3.7%	170468* (53409) 29.6%	5451* (12015) .9%	92300* (37209) 16.0%
33	806* (271) 13.6%	144* (93) 2.4%	492* (168) 8.3%	227499* (107586) 21.2%	64539* (34651) 6.0%	445142* (107788) 41.6%



SIC CODE	PLANTS			EMPLOYEES		
	COLLECTION	INSTRUMENTS	BOTH	COLLECTION	INSTRUMENTS	BOTH
34	890* (315) 4.0%	720* (343) 3.3%	283* (143) 1.3%	182915* (49302) 12.2%	82198* (32488) 5.5%	68683* (53827) 4.6%
35	408* (145) 1.5%	220* (105) .8%	274* (90) 1.0%	271180* (81826) 11.4%	57997* (27480) 2.4%	492779 (98600) 20.7%
36	541* (192) 5.1%	202* (88) 1.9%	400* (107) 3.8%	185970* (57936) 9.5%	156657* (55121) 8.0%	693551 (160590) 35.3%
37	374* (130) 6.7%	286* (160) 5.1%	215* (63) 3.9%	227406 (53510) 12.1%	75394* (35545) 4.0%	1085651 (216454) 57.7%
38	144* (88) 3.6%	185* (160) 4.5%	205* (95) 5.1%	105681* (70747) 13.9%	29909* (29162) 3.9%	231759* (108315) 30.5%
39	225* (254) 2.9%	139* (156) 1.8%	220* (219) 2.9%	53377* (54281) 10.2%	7548* (15598) 1.4%	8219* (20655) 1.6%
41	...	...	...	...	...	...
42	509* (342) 2.4%	486* (375) 2.3%	81* (70) .4%	38459* (25575) 4.7%	31571* (24615) 3.8%	10023* (7348) 1.2%
45	3* (4) .1%	14* (16) .4%	12* (15) .3%	13752* (14653) 3.0%	52570* (57065) 11.7%	25630* (24078) 5.7%
48	...	5* (5) .0%	754* (722) 4.8%	...	1043* (945) .2%	29368* (18733) 4.4%
49	309* (158) 3.0%	1868* (787) 18.2%	497* (348) 4.9%	128631* (71481) 15.3%	109225* (52396) 13.0%	58902* (22189) 7.0%
50	468* (417) 1.5%	98* (135) .3%	124* (141) .4%	30034* (16381) 3.3%	7179* (9867) .8%	37100* (42248) 4.1%
51	73* (66) .8%	221* (223) 2.4%	...	1896* (1708) .9%	3316* (3348) 1.6%	...
55	...	...	...	...	...	...
72	...	1602* (830) 7.5%	206* (253) 1.0%	...	35200* (17561) 7.4%	4532* (5572) 1.0%
73	246* (196) 1.3%	1299* (668) 7.1%	282* (129) 1.5%	55203* (26173) 5.0%	82849* (39937) 7.5%	160420* (81000) 14.6%
75	...	...	...	...	...	...
76	36* (45) .4%	...	...	12672* (15755) 6.2%	...	...
80	842* (322) 13.6%	655 (118) 9.3%	454* (147) 6.4%	601223* (209825) 16.4%	807959 (147691) 22.1%	451348* (125802) 12.3%
All	9682 (870) 1.9%	12123 (1852) 2.4%	8193 (1028) 1.6%	3111486 (264090) 9.4%	2367811 (262021) 7.1%	5241222 (382328) 15.8%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**NOES QUESTIONNAIRE ITEM NO. 36**  
**Direct Reading Instruments Used in Fume Monitoring**

**Intent**

The intent of this question was to categorize the direct reading instrumentation used in the monitoring of fumes, gases, mists, dusts or vapors.

This item was displayed on the questionnaire as:

36. Which types of direct reading instruments are used in the monitoring program? Circle "yes" or "no" for each type listed below:

<u>Yes</u>	<u>No</u>		
		1	2
1. Direct mass measurement tests		1	2
2. Fibrous aerosol monitors		1	2
3. Detector tubes		1	2
4. Infrared (I.R.) gas monitors		1	2
5. Ultraviolet (U.V.) gas monitors		1	2
6. Gas chromatograph monitors		1	2
7. Electrochemical monitors		1	2
8. Other "wet" chemical methods		1	2

**Notes**

This question was asked only of those respondents indicating the existence of a regular program to monitor gases, fumes, dusts, mists or vapors and who also indicated the use of direct reading instruments in that monitoring program. More than one type of direct reading instrument may have been specified.

**Analysis**

Two analysis of the responses to question 36 are presented.

- (1) Response 36, sub-items 1 to 8 - Types of direct reading instruments used in plants using direct reading instruments

The estimated proportions of direct reading instrument types used in plants using direct reading instruments for fume monitoring by plants and workers are displayed in Figure IV-33.

Figure IV-33      Types of instruments used in plants using direct reading instruments by plants and workers

- (2) Response 36, sub-items 1 to 8 - Estimated plants and workers using different types of direct reading instruments

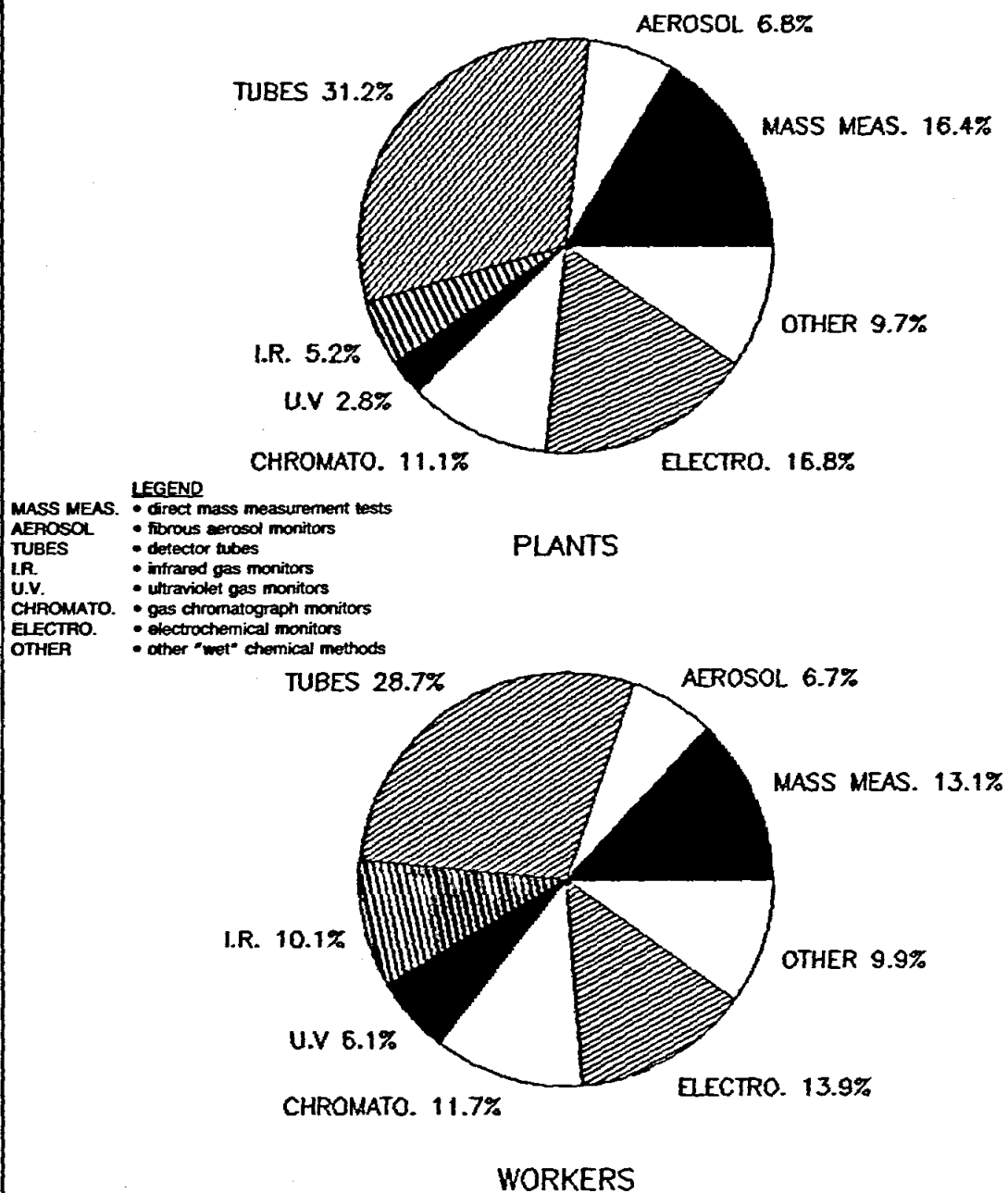
The estimates, by type of direct reading instrument used, of the plants which have regular programs to monitor the environmental levels of chemical fumes, etc., and which use direct reading instruments, and workers in those plants (by number and proportion of the total) are displayed in Tables IV-33, IV-34, IV-35 and IV-36.

Table IV-33	Estimated number of plants by type of direct reading instrument used (by major industrial group)
Table IV-34	Estimated number of plants by type of direct reading instrument used (by 2-digit SIC)
Table IV-35	Estimated number of employees in plants by type of direct reading instrument used (by major industrial group)
Table IV-36	Estimated number of employees in plants by type of direct reading instrument used (by 2-digit SIC)

Note: These estimates of plants and workers in plants using specific types of direct measuring instruments are not mutually self-exclusive. No attempt should be made to total numbers across the eight columns of data provided.

As in Analysis 2, question 32, multiple responses to question 36 from one facility are possible. Therefore the effect of adding across columns is to multiply count a single original observation.

**FIGURE IV - 33**  
**TYPES OF INSTRUMENTS USED IN PLANTS USING DIRECT**  
**READING INSTRUMENTS BY PLANTS AND WORKERS IN PLANTS**  
**(NOES 1981-1983)**



ESTIMATED NUMBER OF PLANTS BY TYPE  
OF DIRECT READING INSTRUMENT USED

MAJOR GROUP	MASS MEASUREMENT	AEROSOL	DETECTOR TUBES	INFRARED GAS	ULTRA-VIOLET GAS	GAS CHROMATOGRAPH	ELECTRO-CHEMICAL	OTHER WET CHEMICAL
07	...	...	...	...	...	...	...	...
13	88* (62) .9%	...	346* (212) 3.6%	40* (31) .4%	...	40* (31) .4%	515* (257) 5.3%	...
15-17	166* (95) .2%	23* (16) .0%	804* (353) .8%	5* (5) .0%	...	177* (154) .2%	548* (278) .6%	341* (333) .3%
20-39	3112 (480) 1.6%	1044 (171) .5%	6545 (877) 3.4%	894 (220) .5%	376* (122) .2%	2181 (414) 1.1%	2031 (257) 1.1%	1635* (411) .9%
40-49	1837* (700) 3.1%	1325* (740) 2.2%	2609* (1054) 4.4%	561* (417) .9%	453* (396) .8%	1267* (681) 2.1%	1950* (752) 3.3%	966* (716) 1.6%
50-59	...	98* (135) .2%	222* (188) .4%	...	...	...	...	221* (223) .4%
70-79	960* (711) 1.3%	116* (72) .2%	1073* (530) 1.4%	92* (59) .1%	142* (70) .2%	378* (264) .5%	1328* (732) 1.8%	521* (300) .7%
80	152* (118) 2.2%	12* (13) .2%	407* (140) 5.8%	405* (116) 5.7%	102* (51) 1.4%	219* (103) 3.1%	90* (64) 1.3%	61* (29) .9%
ALL	6316 (1119) 1.2%	2619* (776) .5%	12007 (1544) 2.4%	1997 (490) .4%	1073* (424) .2%	4261 (860) .8%	6462 (1147) 1.3%	3745* (966) .7%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

ESTIMATED NUMBER OF PLANTS BY TYPE  
OF DIRECT READING INSTRUMENT USED

SIC CODE	MASS MEASUREMENT	AEROSOL	DETECTOR TUBES	INFRARED GAS	ULTRA- VIOLET GAS	GAS CHROMA- TOGRAPH	ELECTRO- CHEMICAL	OTHER MET CHEMICAL
07	...	...	...	...	...	...	...	...
13	88* (62) .9%	...	346* (212) 3.6%	40* (31) .4%	...	40* (31) .4%	515* (257) 5.3%	...
15	31* (22) .1%	16* (14) .1%	268* (217) 1.0%	5* (5) .0%	...	...	243* (214) .9%	5* (5) .0%
16	127* (91) 1.0%	...	528* (266) 4.2%	...	...	169* (150) 1.3%	305* (184) 2.4%	12* (27) .1%
17	8* (10) .0%	8* (10) .0%	8* (10) .0%	...	...	8* (10) .0%	...	324* (324) .5%
20	240* (119) 1.6%	...	577* (187) 3.8%	46* (31) .3%	44* (41) .3%	138* (65) .9%	213* (110) 1.4%	63* (60) .4%
21	15* (8) 13.8%	7* (11) 6.8%	12* (8) 10.8%	4* (6) 4.0%	...	12* (8) 10.8%	15* (8) 13.8%	12* (8) 10.8%
22	47* (31) 1.0%	39* (27) .8%	30* (22) .6%	...	...	8* (8) .2%	...	...
23	...	...	...	...	...	...	...	...
24	66* (63) .6%	76* (68) .6%	193* (120) 1.6%	...	...	186* (120) 1.6%	...	110* (101) .9%
25	3* (4) .1%	...	74* (70) 1.4%	...	...	3* (4) .1%	...	...
26	120* (133) 2.0%	66* (53) 1.1%	208* (148) 3.5%	...	21* (20) .4%	67* (55) 1.1%	87* (62) 1.5%	66* (50) 1.1%
27	253* (167) 1.2%	12* (20) .1%	517* (258) 2.5%	...	...	31* (32) .2%	21* (23) .1%	4* (4) .0%
28	365* (127) 4.7%	144* (66) 1.9%	1630* (456) 21.1%	45* (25) .6%	63* (31) .8%	881* (359) 11.4%	558* (146) 7.2%	487* (326) 6.3%
29	147* (47) 10.4%	51* (39) 3.6%	248* (88) 17.6%	122* (42) 8.7%	31* (31) 2.2%	189* (64) 13.5%	219* (111) 15.6%	282* (201) 20.0%
30	43* (31) .5%	108* (72) 1.3%	245* (114) 2.9%	...	62* (61) .7%	133* (86) 1.6%	106* (93) 1.2%	68* (62) .8%
31	...	...	67* (54) 4.4%	...	...	...	...	...
32	221* (133) 2.2%	28* (33) .3%	216* (92) 2.2%	...	...	59* (35) .6%	94* (82) .9%	36* (29) .4%
33	340* (125) 5.7%	98* (55) 1.7%	521* (169) 8.8%	16* (14) .3%	...	90* (88) 1.5%	103* (48) 1.7%	111* (69) 1.9%

SIC CODE	MASS MEASUREMENT	AEROSOL	DETECTOR TUBES	INFRARED GAS	ULTRA-VIOLET GAS	GAS CHROMATOGRAPH	ELECTRO-CHEMICAL	OTHER WET CHEMICAL
34	522* (282) 2.4%	150* (85) .7%	410* (155) 1.9%	199* (169) .9%	3* (8) .0%	67* (37) .3%	176* (95) .8%	70* (59) .3%
35	116* (53) .4%	88* (47) .3%	346* (99) 1.3%	58* (32) .2%	52* (29) .2%	38 (9) .1%	73* (29) .3%	71* (39) .3%
36	186* (75) 1.8%	95* (71) .9%	421 (104) 4.0%	130* (54) 1.2%	37* (22) .3%	123* (42) 1.2%	137* (80) 1.3%	68* (40) .6%
37	58* (21) 1.0%	71* (30) 1.3%	378* (157) 6.8%	137* (78) 2.4%	38* (16) .7%	73* (40) 1.3%	117* (47) 2.1%	71 (11) 1.3%
38	85* (76) 2.1%	...	315* (149) 7.8%	139* (100) 3.4%	25* (33) .6%	83* (80) 2.1%	86* (79) 2.1%	116* (81) 2.9%
39	284* (214) 3.7%	11* (34) .1%	138* (150) 1.8%	...	...	...	25* (104) .3%	...
41	...	...	...	...	...	...	...	...
42	98* (45) .5%	73* (71) .3%	73* (71) .3%	...	...	...	241* (223) 1.1%	301* (291) 1.4%
45	10* (15) .2%	10* (15) .2%	27* (20) .7%	...	...	...	3* (4) .1%	...
48	751* (722) 4.8%	751* (722) 4.8%	754* (722) 4.8%	...	...	...	5* (5) .0%	...
49	380* (316) 3.7%	492* (393) 4.8%	721* (422) 7.0%	329* (351) 3.2%	453* (396) 4.4%	668* (409) 6.5%	1102* (528) 10.8%	665* (460) 6.5%
50	...	98* (135) .3%	222* (188) .7%	...	...	...	...	...
51	...	...	...	...	...	...	...	221* (223) 2.4%
55	...	...	...	...	...	...	...	...
72	780* (620) 3.7%	...	426* (365) 2.0%	...	...	...	760* (607) 3.6%	48* (48) .2%
73	180* (110) 1.0%	116* (72) .6%	648* (353) 3.5%	92* (59) .5%	142* (70) .8%	378* (264) 2.1%	569* (433) 3.1%	473* (295) 2.6%
75	...	...	...	...	...	...	...	...
76	...	...	...	...	...	...	...	...
80	152* (118) 2.2%	12* (13) .2%	407* (140) 5.8%	405* (116) 5.7%	102* (51) 1.4%	219* (103) 3.1%	90* (64) 1.3%	61* (29) .9%
ALL	5717 (951) 1.1%	2619* (776) .5%	10974 (1518) 2.2%	1765* (469) .3%	1073* (410) .2%	3663 (713) .7%	5864 (1230) 1.2%	3745* (1037) .7%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

ESTIMATED NUMBER OF EMPLOYEES IN PLANTS BY TYPE  
OF DIRECT READING INSTRUMENT USED

MAJOR GROUP	MASS MEASUREMENT	AEROSOL	DETECTOR TUBES	INFRARED GAS	ULTRA-VIOLET GAS	GAS CHROMATOGRAPH	ELECTRO-CHEMICAL	OTHER WET CHEMICAL
07	...	...	...	...	...	...	...	...
13	17700* (12000) 4.3%	...	68603* (42492) 16.6%	15189* (11898) 3.7%	...	15189* (11898) 3.7%	73757* (43173) 17.8%	...
15-17	58197* (30418) 1.9%	3663* (2760) .1%	112300* (50382) 3.7%	20157* (21701) .7%	...	47792* (39814) 1.6%	86317* (42860) 2.8%	32481* (30778) 1.1%
20-39	2285655 (274281) 11.9%	1174143 (228410) 6.1%	4662873 (311970) 24.2%	1432381 (179644) 7.4%	936682 (209183) 4.9%	1919790 (258231) 10.0%	2383938 (224008) 12.4%	1750953 (282360) 9.1%
40-49	94247* (30755) 3.0%	87341* (36270) 2.8%	238925* (65819) 7.6%	11412* (8781) .4%	36262* (31700) 1.1%	88475* (35488) 2.8%	148051* (38122) 4.7%	70638* (40145) 2.2%
50-59	...	7179* (9867) .5%	44279* (42683) 2.9%	...	...	...	...	3316* (3348) .2%
70-79	102264* (42701) 4.7%	56185* (30433) 2.6%	211032* (94211) 9.6%	95707* (63331) 4.4%	117484* (65484) 5.3%	123715* (61457) 5.6%	80735* (34170) 3.7%	72330* (29120) 3.3%
80	133088* (64039) 3.6%	45006* (36568) 1.2%	566623* (212360) 15.5%	501089 (114557) 13.7%	156156* (72187) 4.3%	209772* (74881) 5.7%	80573* (49555) 2.2%	115006* (56383) 3.1%
ALL	2691151 (288392) 8.1%	1373517 (236337) 4.1%	5904635 (402239) 17.7%	2075935 (223821) 6.2%	1246584 (232941) 3.7%	2404733 (281164) 7.2%	2853372 (242811) 8.5%	2044725 (293809) 6.1%

\*Standard error &gt;25% of the estimate. The estimate may be unreliable.

...No facilities observed.





ESTIMATED NUMBER OF EMPLOYEES IN PLANTS BY TYPE  
OF DIRECT READING INSTRUMENT USED

SIC CODE	MASS MEASUREMENT	AEROSOL	DETECTOR TUBES	INFRARED GAS	ULTRA-VIOLET GAS	GAS CHROMATOGRAPH	ELECTRO-CHEMICAL	OTHER WET CHEMICAL
07	...	...	...	...	...	...	...	...
13	17700* (12000) 4.3%	...	68603* (42492) 16.6%	15189* (11898) 3.7%	...	15189* (11898) 3.7%	73757* (43173) 17.8%	...
15	15203* (14185) 1.7%	3106* (2726) .3%	42805* (24563) 4.8%	20157* (21701) 2.2%	...	...	22552* (13168) 2.5%	20157* (21701) 2.2%
16	42437* (27586) 7.2%	...	68937* (42956) 11.6%	...	...	47235* (39394) 8.0%	63765* (40261) 10.8%	8435* (19241) 1.4%
17	557* (729) .0%	557* (729) .0%	557* (729) .0%	...	...	557* (729) .0%	...	3889* (3892) .2%
20	80225* (35371) 5.2%	...	272907* (79490) 17.6%	63050* (31016) 4.1%	9404* (8758) .6%	105832* (47948) 6.8%	117827* (54282) 7.6%	51310* (48988) 3.3%
21	42021* (35930) 36.9%	16019* (23625) 14.1%	16277* (23396) 14.3%	258* (345) .2%	...	16277* (23396) 14.3%	42021* (35930) 36.9%	16277* (23396) 14.3%
22	67170* (52134) 9.4%	20205* (13318) 2.8%	53087* (46469) 7.4%	...	...	46166* (45024) 6.5%	...	...
23	...	...	...	...	...	...	...	...
24	33214* (23258) 5.7%	11747* (10539) 2.0%	32752* (17396) 5.7%	...	...	24606* (15577) 4.2%	...	12859* (11839) 2.2%
25	20917* (22806) 4.0%	...	77760* (59575) 15.0%	...	...	20917* (22806) 4.0%	...	...
26	74094* (75530) 11.8%	93108* (64580) 14.9%	139876* (88867) 22.3%	...	12975* (12418) 2.1%	81466* (61087) 13.0%	106083* (68189) 16.9%	51886* (43062) 8.3%
27	82523* (36937) 7.0%	12676* (20866) 1.1%	137430* (52767) 11.6%	...	...	34991* (24532) 3.0%	13537* (15007) 1.1%	20626* (18958) 1.7%
28	206931 (38271) 22.5%	79275* (38364) 8.6%	449582 (80355) 49.0%	106528* (55645) 11.6%	71388* (46150) 7.8%	244792 (60820) 26.7%	235998* (68295) 25.7%	84748* (45981) 9.2%
29	84148* (33144) 37.9%	24714* (18325) 11.1%	157074* (74566) 70.8%	71476* (54853) 32.2%	34219* (54628) 15.4%	112706* (69198) 50.8%	126695* (72997) 57.1%	86681* (38123) 39.1%
30	36093* (19511) 4.8%	87397* (64429) 11.6%	142936* (69073) 19.0%	...	64484* (63269) 8.6%	99350* (68369) 13.2%	27014* (27030) 3.6%	69230* (63952) 9.2%
31	...	...	15188* (13315) 8.6%	...	...	...	...	...
32	23587* (13083) 4.1%	1844* (2167) .3%	73206* (33629) 12.7%	...	...	26224* (18065) 4.6%	18022* (17959) 3.1%	21956* (17692) 3.8%
33	276518* (96692) 25.8%	89278 (21670) 8.3%	471940 (101893) 44.1%	55683* (43000) 5.2%	...	68521* (54929) 6.4%	168528 (22152) 15.7%	190785* (78595) 17.8%

SIC CODE	MASS MEASUREMENT	AEROSOL	DETECTOR TUBES	INFRARED GAS	ULTRA-VIOLET GAS	GAS CHROMATOGRAPH	ELECTRO-CHEMICAL	OTHER WET CHEMICAL
34	54367* (28564) 3.6%	23288* (26101) 1.5%	108154* (62088) 7.2%	27148* (15667) 1.8%	3227* (8689) .2%	21044* (8773) 1.4%	20557* (12680) 1.4%	15554* (13107) 1.0%
35	166101* (64300) 7.0%	141829* (52315) 6.0%	489366 (101557) 20.6%	159989* (44230) 6.7%	143251* (40618) 6.0%	146158* (37044) 6.1%	256316* (98724) 10.8%	125599* (43657) 5.3%
36	371847* (164186) 18.9%	218113* (152154) 11.1%	682368 (157772) 34.7%	280058* (118084) 14.2%	145638* (108504) 7.4%	240593 (57723) 12.2%	344232* (144285) 17.5%	217263* (150213) 11.1%
37	506788* (254820) 27.0%	352453* (162022) 18.7%	1097019 (176472) 58.3%	543868* (277025) 28.9%	418786* (216160) 22.3%	478226* (310759) 25.4%	747621* (296434) 39.8%	621057* (196334) 33.0%
38	155451* (114926) 20.5%	...	237444* (106903) 31.3%	124324* (114318) 16.4%	33311* (46769) 4.4%	151921* (121509) 20.0%	156083* (118130) 20.6%	165121* (112000) 21.7%
39	3660* (2598) .7%	2198* (6852) .4%	8506* (17846) 1.6%	...	...	...	3403* (13914) .6%	...
41	...	...	...	...	...	...	...	...
42	27121* (14169) 3.3%	7010* (6805) .9%	7010* (6805) .9%	...	...	...	15248* (12141) 1.9%	6235* (4656) .8%
45	11401* (18177) 2.5%	11401* (18177) 2.5%	78200* (61379) 17.3%	...	...	...	14228* (18215) 3.2%	...
48	16143* (14712) 2.4%	16143* (14712) 2.4%	29368* (18733) 4.4%	...	...	...	1043* (945) .2%	...
49	30004* (21641) 3.6%	52788* (33287) 6.3%	73000* (24602) 8.7%	3287* (3514) .4%	36262* (31700) 4.3%	78897* (35621) 9.4%	107954* (40504) 12.8%	64403* (37683) 7.7%
50	...	7179* (9867) .8%	44279* (42683) 4.8%	...	...	...	...	...
51	...	...	...	...	...	...	...	3316* (3345) 1.6%
55	...	...	...	...	...	...	...	...
72	10274* (7884) 2.2%	...	10903* (9554) 2.3%	...	...	...	17084* (14302) 3.6%	6003* (6025) 1.3%
73	91990* (40545) 8.4%	56185* (30433) 5.1%	200129* (93654) 18.2%	95707* (63331) 8.7%	117484* (65484) 10.7%	123715* (61457) 11.2%	63651* (32238) 5.8%	66328* (28429) 6.0%
75	...	...	...	...	...	...	...	...
76	...	...	...	...	...	...	...	...
80	133088* (64039) 3.6%	45006* (36568) 1.2%	566623* (212360) 15.5%	501089 (114557) 13.7%	156156* (72187) 4.3%	209772* (74881) 5.7%	80573* (49555) 2.2%	115006* (56383) 3.1%
ALL	2681573 (245559) 8.1%	1373517 (261706) 4.1%	5853289 (424585) 17.6%	2067810 (162135) 6.2%	1246584 (211924) 3.7%	2395155 (239695) 7.2%	2843794 (262815) 8.6%	2044725 (318807) 6.1%

\*Standard error &gt;25% of the estimate. The estimate may be unreliable.

...No facilities observed.

**NOES QUESTIONNAIRE ITEM NO. 37**  
**Retention of Records From Fume Monitoring Programs**

**Intent**

The intent of this question was to determine the length of time that facilities retain the records from programs to monitor fumes, gases, dusts, or mists in the workplace.

This item was displayed on the questionnaire as:

37. How long do you retain the records of the monitoring program?

-- Years (If "forever" code "99")  
(If "unknown" code "UK")

**Notes**

This question was asked only of those respondents who indicated that a program to monitor fumes, gases, mists, or dusts was in existence in the facility.

Definitions, inclusions, and exclusions pertaining to fume monitoring are found in the Notes text of questionnaire item 36.

As discussed in the Notes text for question 33, three classes of responses to question 37 were possible. As before, responses of "unknown" duration were discarded, and the "forever" and "non-forever" values analyzed separately.

**Analysis**

Two analyses of the responses to question 37 are presented.

- (1) Response 37 - "Non-forever" or average years of retention for the records from fume monitoring programs

The estimated average length of time that records from fume monitoring programs are retained are displayed in Figures IV-34 and IV-35, and Tables IV-37 and IV-38.

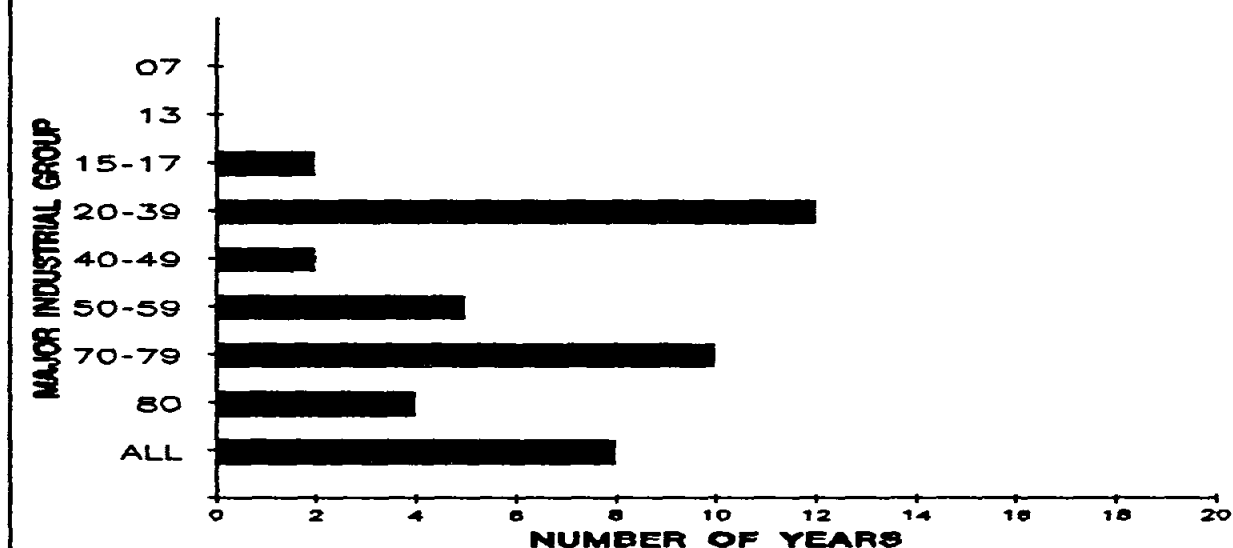
Figure IV-34	Average number of "non-forever" years plants keep fume monitoring records (by major industrial group)
Figure IV-35	Average number of "non-forever" years plants keep fume monitoring records (by 2-digit SIC)
Table IV-37	Average number of years facilities keep fume monitoring records among plants not reporting "forever" (by major industrial group)
Table IV-38	Average number of years facilities keep fume monitoring records among plants not reporting "forever" (by 2-digit SIC)

**(2) Response 37 - Fume monitoring records kept "forever"**

The estimates of the plants which keep fume monitoring records "forever", and workers in those plants (by number and proportion of the total) are displayed in Figures IV-36 and IV-37, and Tables IV-39 and IV-40.

<b>Figure IV-36</b>	<b>Proportion of plants which keep fume monitoring records "forever"</b> (by major industrial group)
<b>Figure IV-37</b>	<b>Plants which keep fume monitoring records "forever"</b> (by 2-digit SIC)
<b>Table IV-39</b>	<b>Number and percent of plants and employees in plants which keep fume monitoring records "forever" (by major industrial group)</b>
<b>Table IV-40</b>	<b>Number and percent of plants and employees in plants which keep fume monitoring records "forever" (by 2-digit SIC)</b>

**FIGURE IV - 34**  
**AVERAGE NUMBER OF "NON-FOREVER" YEARS**  
**PLANTS KEEP FUME MONITORING RECORDS**  
**(NOES 1981-1983)**



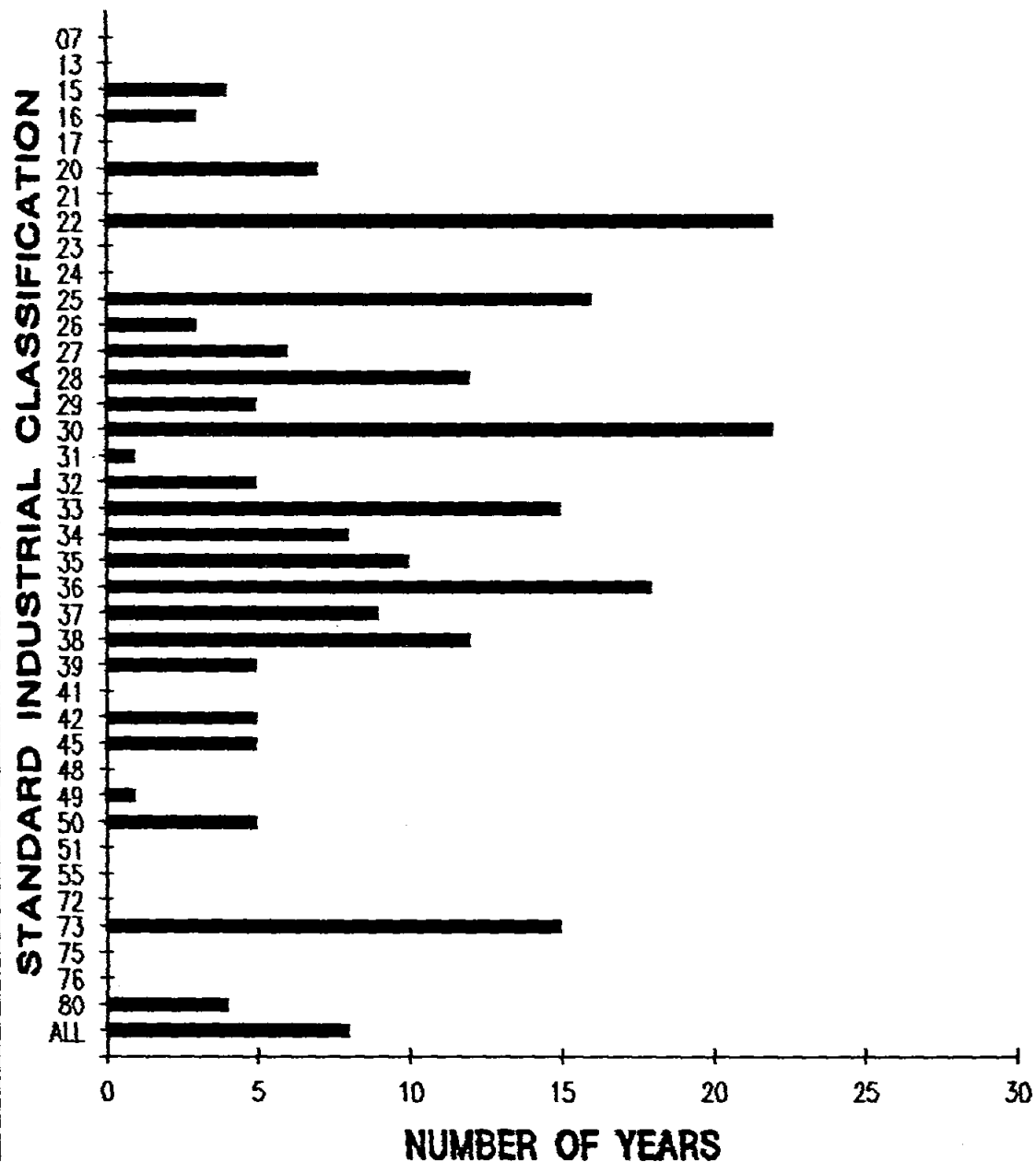
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-37

AVERAGE NUMBER OF YEARS FACILITIES KEEP FUME MONITORING RECORDS AMONG PLANTS NOT REPORTING "FOREVER"

MAJOR GROUP	PLANT SIZE			ALL
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	
07	...	...	...	...
13	...	...	...	...
15-17	2* (2)	4* (2)	1* (1)	2* (2)
20-39	9* (4)	8 (2)	21 (3)	12 (2)
40-49	<1	19* (17)	21* (13)	2* (2)
50-59	...	5* (3)	...	5* (3)
70-79	7* (7)	75* (53)	...	10* (8)
80	...	4* (2)	8* (3)	4* (2)
ALL	5* (2)	11* (3)	17 (3)	8 (2)

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE IV - 35**  
**AVERAGE NUMBER OF "NON-FOREVER" YEARS**  
**PLANTS KEEP FUME MONITORING RECORDS**  
**(NOES 1981-1983)**



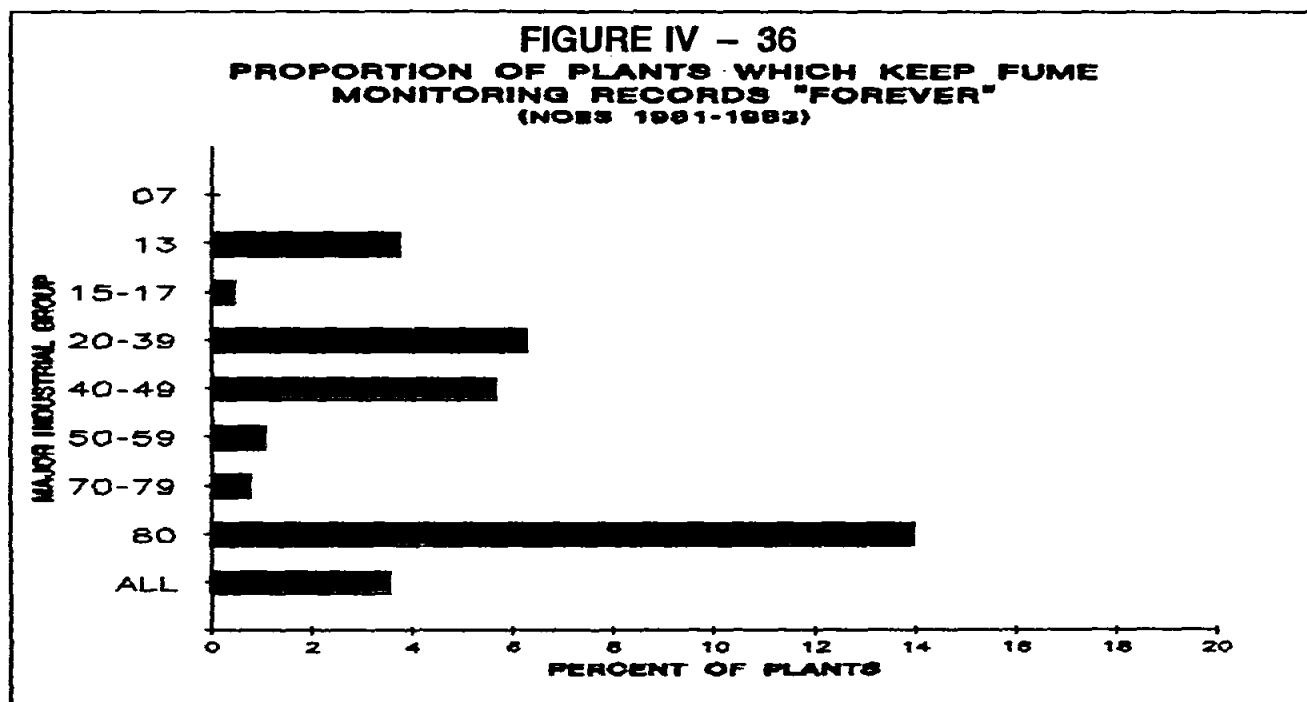
## AVERAGE NUMBER OF YEARS FACILITIES KEEP PURE MONITOR RECORDS AMONG PLANTS NOT REPORTING "FOREVER"

SIC CODE	PLANT SIZE			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	ALL
07	...	...	...	...
13	...	...	...	...
15	...	5* (4)	2* (1)	4* (3)
16	3* (2)	4* (2)	...	3* (2)
17	...	...	...	...
20	...	6* (4)	17* (14)	7* (3)
21	...	...	...	...
22	...	11* (7)	30 (2)	22 (5)
23	...	...	...	...
24	...	...	...	...
25	...	30* (21)	5* (4)	16* (12)
26	...	3* (2)	...	3* (2)
27	...	5* (4)	8* (6)	6* (3)
28	4* (7)	6* (6)	41* (18)	12* (10)
29	...	...	30 ( $<.5$ )	5* (18)
30	...	16* (12)	26* (10)	22* (8)
31	...	1* (1)	...	1* (1)
32	...	7* (5)	3* (2)	5* (3)
33	16* (10)	10* (10)	9* (6)	15* (7)



SIC CODE	PLANT SIZE			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	ALL
34	...	9* (7)	5* (4)	8* (5)
35	...	1* (1)	19* (6)	10* (4)
36	40* (27)	5* (2)	18* (9)	18* (9)
37	4* (2)	...	25 (4)	9* (8)
38	...	29* (13)	7* (7)	12* (8)
39	2* (1)	5* (4)	30* (21)	5* (10)
41	...	...	...	...
42	...	25* (25)	...	5* (5)
45	...	...	5* (13)	5* (13)
48	...	...	...	...
49	<1	...	30* (21)	1* (1)
50	...	5* (3)	...	5* (3)
51	...	...	...	...
55	...	...	...	...
72	...	...	...	...
73	12* (8)	75* (53)	...	15* (13)
75	...	...	...	...
76	...	...	...	...
80	...	4* (2)	8* (3)	4* (2)
ALL	5* (2)	11* (3)	17 (3)	8 (2)

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.



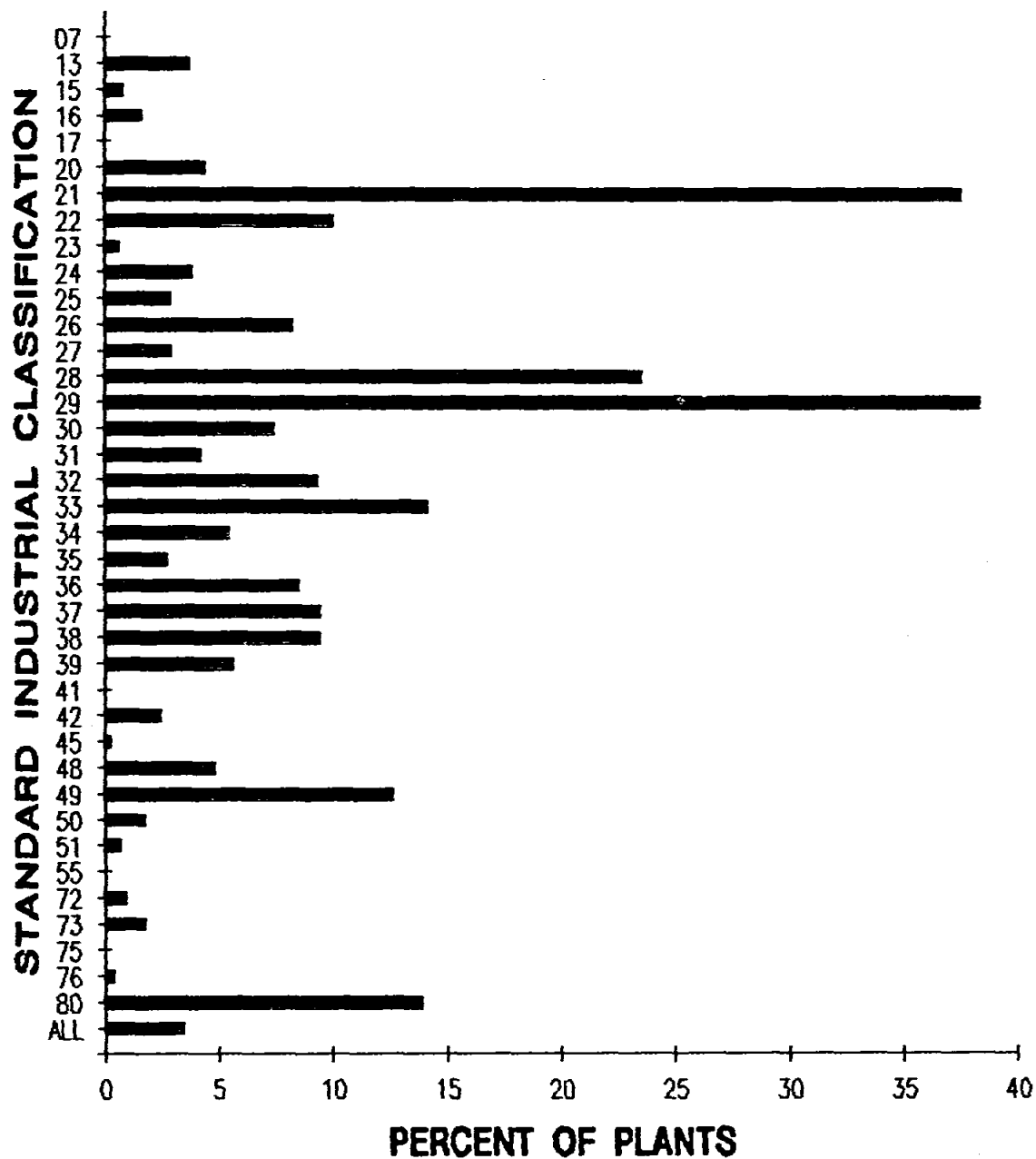
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-39

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 KEEP FUME MONITORING RECORDS "FOREVER"

MAJOR GROUP	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	...	...	...	...	...	...	...	...
13	60* (65) .7%	306* (183) 30.0%	...	366* (198) 3.8%	3743* (4061) 1.8%	53967* (32688) 31.0%	...	57710* (33140) 13.9%
15-17	241* (216) .3%	185* (126) 4.5%	35* (47) 14.6%	461* (251) .5%	8002* (6954) .4%	21339* (13700) 2.9%	38283* (35875) 16.2%	67625* (37893) 2.2%
20-39	4246 (732) 2.8%	5150 (534) 16.2%	2708 (217) 43.2%	12103 (961) 6.3%	201884 (33327) 4.4%	1157064 (130721) 18.1%	4507450 (362619) 54.5%	5866398 (417130) 30.5%
40-49	2531* (1001) 4.8%	711* (233) 12.2%	132* (61) 28.2%	3374* (1081) 5.7%	113003* (43011) 7.9%	144652* (48986) 12.5%	129818* (49238) 22.6%	387473 (93092) 12.3%
50-59	421* (420) .7%	224* (173) 8.4%	...	645* (465) 1.1%	10447* (10095) .9%	52206* (45382) 12.8%	...	62654* (47527) 4.1%
70-79	206* (253) .3%	241* (81) 10.3%	135* (107) 38.2%	582* (266) .8%	4532* (5572) .3%	72227* (22200) 15.5%	162895* (97151) 48.0%	239654* (94596) 10.9%
80	...	415* (161) 19.2%	572 (78) 27.8%	987 (177) 14.0%	...	83819* (33212) 15.7%	895928 (134940) 29.6%	979747 (140287) 26.8%
ALL	7704 (1352) 1.7%	7231 (672) 14.5%	3582 (265) 37.9%	18518 (1585) 3.6%	341612 (56200) 3.1%	1585274 (156202) 16.1%	5734375 (403548) 46.0%	7661261 (464850) 22.9%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE IV - 37**  
**PLANTS WHICH KEEP FUME MONITORING**  
**RECORDS "FOREVER"**  
 (NOES 1981-1983)



## NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-40

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
KEEP FUME MONITORING RECORDS "FOREVER"

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	...	...	...	...	...	...	...	...
13	60* (65) .7%	306* (183) 30.0%	...	366* (198) 3.8%	3743* (4061) 1.8%	53967* (32688) 31.0%	...	57710* (33140) 13.9%
15	233* (215) .9%	...	5* (5) 3.7%	238* (215) .9%	7445* (6875) 1.3%	...	20157* (21701) 15.0%	27602* (22665) 3.1%
16	...	185* (126) 16.5%	30* (46) 28.4%	215* (126) 1.7%	...	21339* (13700) 10.3%	18126* (28085) 17.9%	39465* (28317) 6.7%
17	8* (10) .0%	...	...	8* (10) .0%	557* (729) .0%	...	...	557* (729) .0%
20	128* (82) 1.1%	368* (151) 11.4%	180* (71) 32.3%	676* (190) 4.5%	4361* (2778) 1.1%	72644* (24748) 10.8%	177583* (62372) 36.1%	254588* (68580) 16.4%
21	30* (43) 100.0%	...	11* (11) 13.5%	41* (42) 37.6%	1866* (2685) 100.0%	...	41763* (36135) 37.2%	43629* (35411) 38.3%
22	...	375* (151) 23.6%	112* (55) 37.5%	487* (141) 10.1%	...	99876* (41252) 28.8%	98613* (65140) 37.8%	198489* (63755) 27.8%
23	...	68* (52) 2.2%	47* (41) 19.4%	115* (72) .7%	...	7223* (5471) 1.2%	47062* (40984) 22.6%	54285* (42381) 4.4%
24	175* (182) 1.6%	267* (137) 23.2%	19* (8) 18.1%	461* (200) 3.9%	8023* (7237) 2.6%	40970* (20506) 22.3%	35767* (18789) 38.7%	84760* (29875) 14.6%
25	48* (74) 1.1%	26* (43) 2.5%	85* (74) 71.7%	159* (99) 3.0%	3348* (5195) 2.4%	10275* (16813) 4.0%	90475* (62473) 73.6%	104099* (64021) 20.1%
26	184* (136) 4.5%	204* (143) 13.0%	99* (63) 46.4%	487* (243) 8.3%	15793* (11419) 11.5%	53634* (36457) 19.1%	134681* (62745) 65.1%	204108* (88476) 32.6%
27	384* (230) 2.1%	137* (79) 7.3%	83* (50) 26.4%	604* (277) 3.0%	19205* (12304) 4.0%	29118* (17335) 8.1%	103446* (46659) 29.9%	151769* (53848) 12.8%
28	977* (373) 15.8%	613 (116) 52.8%	232* (68) 60.9%	1821 (413) 23.6%	33786* (10653) 18.7%	154831 (31919) 59.4%	319111* (121327) 67.0%	507728 (125626) 55.3%
29	249* (178) 24.6%	203* (115) 69.3%	87* (38) 86.5%	540* (227) 38.4%	17737* (11943) 43.3%	44393* (16813) 70.2%	77880* (33613) 66.3%	140009* (45779) 63.1%
30	263* (141) 3.9%	255* (162) 16.6%	120* (78) 53.5%	638* (184) 7.5%	16424* (8546) 7.3%	54155* (38654) 18.4%	114171* (71232) 48.9%	184750* (78354) 24.5%
31	...	65* (52) 11.4%	...	65* (52) 4.3%	...	20236* (16287) 14.9%	...	20236* (16287) 11.5%
32	354* (188) 4.0%	450* (144) 44.4%	134* (62) 72.9%	938* (252) 9.4%	17707* (9932) 7.5%	90036* (27308) 43.1%	101627* (48533) 78.8%	209370* (55202) 36.4%
33	138* (95) 3.3%	472* (147) 32.2%	234* (62) 69.3%	843 (199) 14.2%	10216* (6769) 7.4%	101434* (34598) 32.6%	438847 (66987) 70.6%	550496 (77836) 51.4%

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	558* (251) 3.0%	512 (100) 4.2%	148* (60) 42.9%	1219 (292) 5.5%	22421* (9241) 4.0%	97447 (22701) 16.3%	141526* (73836) 40.3%	261394* (76161) 17.4%
35	59* (64) .3%	412* (164) 12.1%	273 (61) 34.9%	745* (191) 2.8%	3254* (3512) .5%	110619* (42294) 16.7%	444705 (83125) 40.0%	558578 (92851) 23.5%
36	146* (103) 2.1%	321* (135) 12.0%	447* (124) 56.8%	914* (247) 8.6%	8093* (6056) 3.5%	78745* (33919) 14.2%	806016 (170559) 68.2%	892853 (186942) 45.4%
37	53* (66) 1.3%	239* (126) 20.1%	237* (81) 56.9%	529* (153) 9.5%	3953* (4982) 3.1%	53889* (33543) 22.5%	1068795 (216157) 70.6%	1126637 (207188) 59.9%
38	207* (176) 7.7%	29* (26) 3.0%	149* (73) 35.8%	385* (156) 9.5%	8423* (6305) 8.1%	8684* (9312) 4.5%	245916* (102845) 53.4%	263023* (101712) 34.6%
39	292* (209) 4.5%	132* (335) 16.6%	10* (10) 3.0%	435* (385) 5.7%	7275* (5776) 4.4%	28855* (69969) 19.3%	19466* (18968) 9.3%	55595* (69146) 10.6%
41	...	...	...	...	...	...	...	...
42	488* (350) 2.4%	17* (20) 1.1%	25* (26) 30.7%	530* (344) 2.5%	36734* (26386) 7.5%	1689* (2029) .7%	20111* (20857) 26.9%	58535* (27698) 7.1%
45	...	...	13* (16) 8.8%	13* (16) .3%	...	...	25153* (25573) 9.5%	25153* (25573) 5.6%
48	751* (722) 5.1%	5* (5) .6%	3* (4) 10.1%	760* (722) 4.9%	16143* (14712) 3.8%	1043* (945) .6%	13226* (14092) 18.9%	30412* (19386) 4.5%
49	693* (474) 8.4%	513* (211) 27.5%	91* (62) 52.3%	1297* (569) 12.7%	50548* (36121) 18.8%	115906* (47732) 27.2%	71328* (48642) 48.7%	237782* (82520) 28.3%
50	348* (416) 1.1%	224* (173) 12.5%	...	572* (461) 1.8%	8552* (9990) 1.4%	52206* (45382) 18.4%	...	60758* (47403) 6.7%
51	73* (66) .8%	...	...	73* (66) .8%	1896* (1708) 1.0%	...	...	1896* (1708) .9%
55	...	...	...	...	...	...	...	...
72	206* (253) 1.0%	...	...	206* (253) 1.0%	4532* (5572) 1.2%	...	...	4532* (5572) 1.0%
73	...	204* (77) 13.7%	135* (107) 39.7%	340* (140) 1.8%	...	59554* (19426) 17.0%	162895* (97151) 49.5%	222450* (97621) 20.2%
75	...	...	...	...	...	...	...	...
76	...	36* (45) 29.4%	...	36* (45) .4%	...	12672* (15755) 52.1%	...	12672* (15755) 6.2%
80	...	415* (161) 19.2%	572 (78) 27.8%	987 (177) 14.0%	...	83819* (33212) 15.7%	895928 (134940) 29.6%	979747 (140287) 26.8%
ALL	7106 (1215) 1.6%	7055 (617) 14.2%	3582 (197) 38.0%	17743 (1332) 3.5%	332034 (43476) 3.0%	1559261 (148843) 16.0%	5734375 (319080) 46.0%	7625670 (350782) 22.9%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**NOES QUESTIONNAIRE ITEM NO. 38  
Substitution of Chemical Materials**

**Intent**

The intent of this question was to determine whether the facility had substituted chemical agents within the past five years.

This item was displayed on the questionnaire as:

38. Have any substitutions of chemical materials been made within the last 5 years?

- 1 Yes
- 2 No (Skip to Question 41)

**Notes**

The term "substitutions" used in this question means to cease use of one chemical material and initiate use of an alternative.

The exchange of one tradename compound for another was not considered a substitution unless it was related to the actual chemical content of both tradename products.

**Analysis**

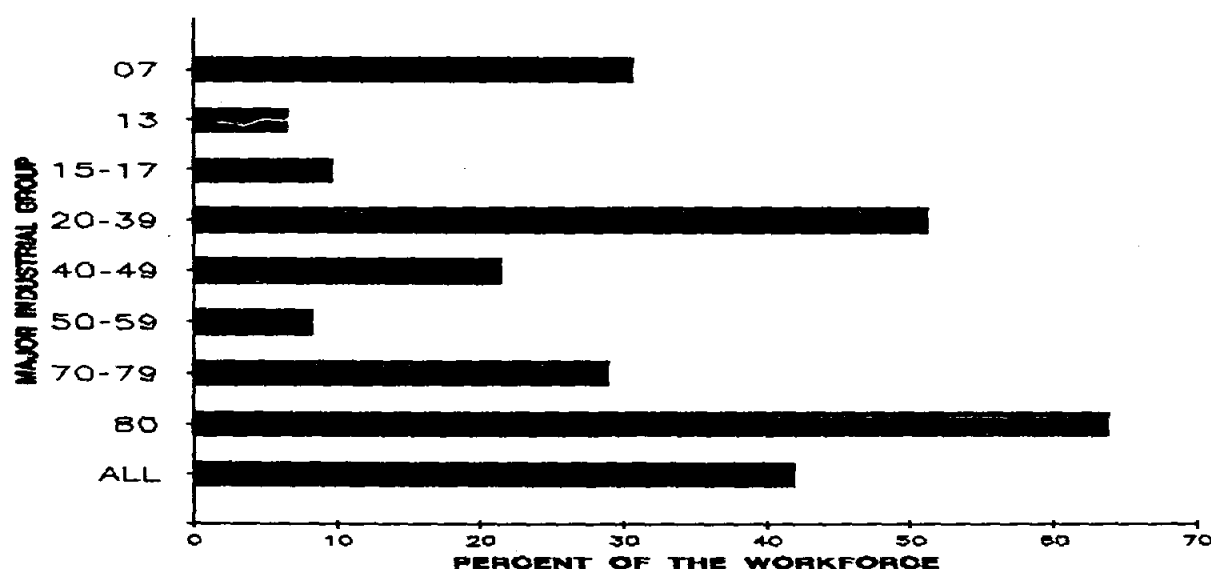
One analysis of the responses to question 38 is presented.

**Response 38.1 - Chemical substitutions made in the last five years**

The estimates of the plants which have substituted chemical materials in the past five years, and workers in those plants (by number and proportion of the total) are displayed in Figures IV-38, IV-39, IV-40, IV-41, IV-42, and IV-43, and Tables IV-41 and IV-42.

Figure IV-38	Workers in plants where chemicals were substituted (by major industrial group)
Figure IV-39	Workers in plants where chemicals were substituted (by 2-digit SIC)
Figure IV-40	Plants where chemicals were substituted (by major industrial group)
Figure IV-41	Plants where chemicals were substituted (by 2-digit SIC)
Figure IV-42	Substitution of chemical materials by plant size
Figure IV-43	Chemical substitution by workforce proportion and plant size
Table IV-41	Number and percent of plants and employees in plants which have substituted chemical materials in the last five years (by major industrial group)
Table IV-42	Number and percent of plants and employees in plants which have substituted chemical materials in the last five years (by 2-digit SIC)

**FIGURE IV - 38**  
**WORKERS IN PLANTS WHERE CHEMICALS WERE SUBSTITUTED**  
**(NOES 1981-1983)**



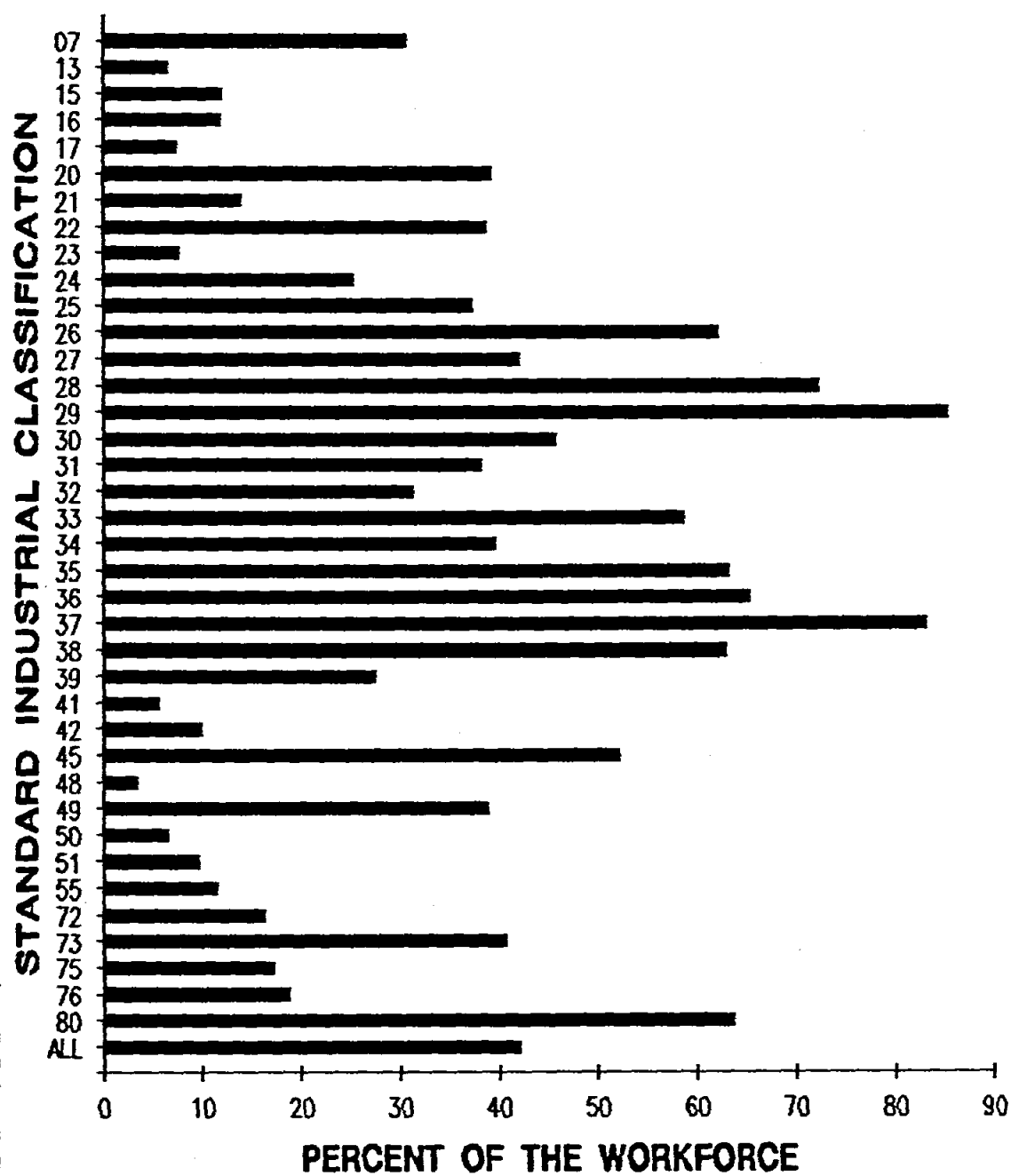
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-41

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 HAVE SUBSTITUTED CHEMICAL MATERIALS IN THE LAST FIVE YEARS

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	1739* (811) 31.3%	...	...	1739* (811) 30.9%	34136* (15807) 32.9%	...	...	34136* (15807) 30.8%
13	49* (44) .6%	113* (78) 11.1%	...	162* (118) 1.7%	2969* (2642) 1.4%	24972* (14292) 14.4%	...	27942* (16187) 6.7%
15-17	6682 (1318) 7.1%	390* (177) 9.4%	30* (29) 12.6%	7103 (1280) 7.2%	183063 (32312) 8.7%	55304* (23811) 7.5%	62494* (28273) 26.5%	300861 (42787) 9.8%
20-39	23501 (1879) 15.3%	13472 (910) 42.4%	3955 (206) 63.1%	40928 (1969) 21.4%	784746 (66973) 17.0%	2810729 (199425) 44.0%	6304411 (255180) 76.3%	9899887 (365337) 51.4%
40-49	2319* (709) 4.4%	974* (326) 16.7%	250* (82) 53.4%	3542 (830) 6.0%	91459* (26282) 6.4%	220678* (76927) 19.1%	370852* (93898) 64.6%	682989 (137956) 21.6%
50-59	4131* (1114) 7.1%	104* (88) 3.9%	...	4236* (1127) 6.9%	107786* (28226) 9.6%	21161* (16297) 5.2%	...	128947* (32697) 8.4%
70-79	12898 (2022) 17.6%	797* (209) 34.0%	209* (120) 59.1%	13904 (1976) 18.3%	221340 (37403) 15.9%	189122* (50795) 40.7%	228258* (99604) 67.2%	638720 (98188) 29.1%
80	901* (445) 31.7%	1026 (229) 47.4%	1321 (199) 64.1%	3248 (546) 46.0%	29717* (15348) 29.2%	248494* (62214) 46.5%	2058182 (261382) 68.1%	2336393 (274645) 63.9%
ALL	52221 (3458) 11.6%	16876 (1037) 33.7%	5766 (322) 61.1%	74863 (3514) 14.7%	1455216 (94384) 13.1%	3570460 (230598) 36.2%	9024198 (391119) 72.4%	14049874 (490902) 42.1%

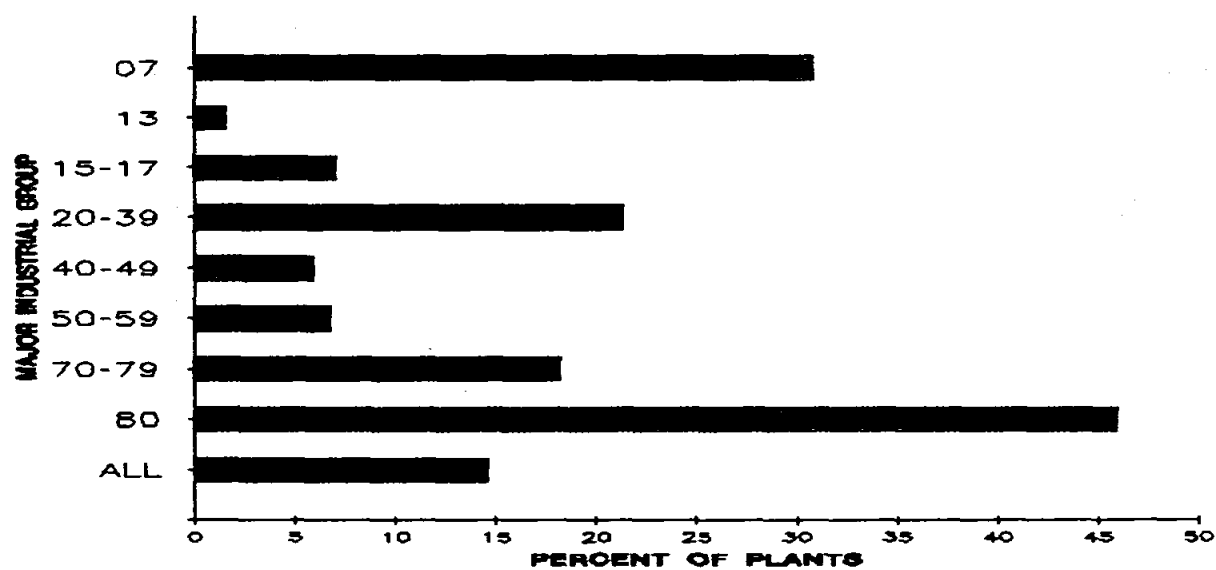
\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE IV - 39**  
**WORKERS IN PLANTS WHERE CHEMICALS WERE SUBSTITUTED**  
**(NOES 1981-1983)**





**FIGURE IV - 40**  
**PLANTS WHERE CHEMICALS WERE SUBSTITUTED**  
**(NOES 1981-1983)**



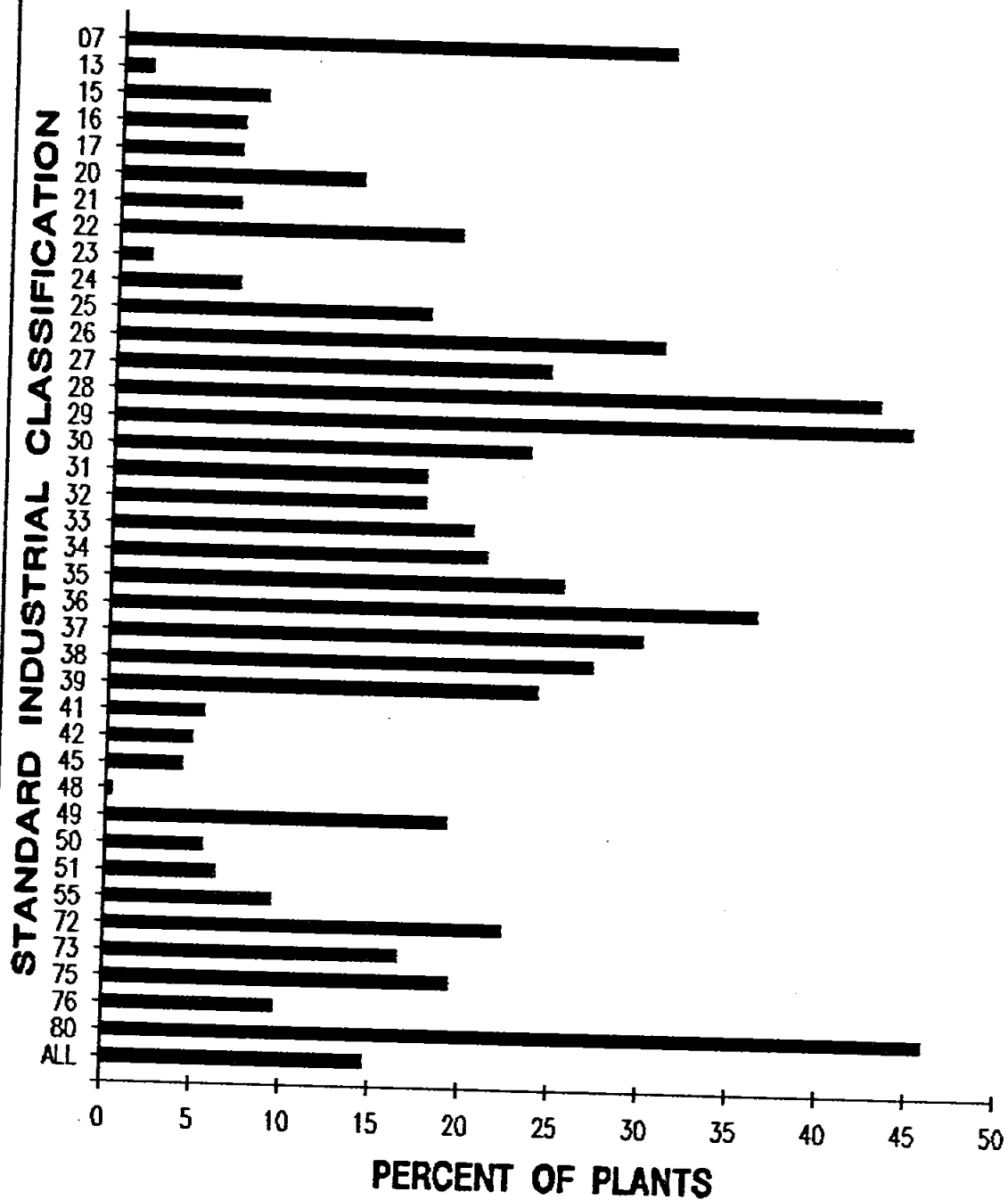
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
HAVE SUBSTITUTED CHEMICAL MATERIALS IN THE LAST FIVE YEARS

SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	1739* (811) 31.3%	...	...	1739* (811) 30.9%	34136* (15807) 32.9%	...	...	34136* (15807) 30.8%
13	49* (44) .6%	113* (78) 11.1%	...	162* (118) 1.7%	2969* (2642) 1.4%	24972* (14292) 14.4%	...	27942* (16187) 6.7%
15	2004 (441) 8.0%	138* (79) 12.5%	10* (4) 7.4%	2152 (451) 8.2%	57059* (17137) 10.1%	15790* (8689) 8.0%	36379* (12499) 27.0%	109227 (20519) 12.2%
16	773* (465) 6.9%	83* (83) 7.5%	20* (29) 19.1%	877* (468) 7.0%	29823* (15135) 10.5%	15298* (10865) 7.4%	26115* (22662) 25.8%	71236* (24308) 12.0%
17	3905* (1112) 6.7%	169* (121) 8.8%	...	4074* (1092) 6.8%	96181 (22550) 7.7%	24216* (18085) 7.3%	...	120397 (25950) 7.6%
20	599* (268) 5.2%	1163 (258) 36.2%	315* (108) 56.3%	2076 (359) 13.7%	31103* (16764) 8.0%	277522 (64690) 41.2%	302920* (98216) 61.6%	611544 (110475) 39.4%
21	...	...	7* (11) 9.4%	7* (11) 6.8%	...	...	16019* (23625) 14.3%	16019* (23625) 14.1%
22	120* (95) 4.1%	692 (146) 43.6%	116* (70) 38.8%	928 (155) 19.3%	8653* (6282) 8.2%	149835 (33066) 43.2%	119392* (73613) 45.7%	277880* (88426) 38.9%
23	...	249* (108) 8.0%	47* (41) 19.4%	296* (120) 1.9%	...	50967* (23859) 8.4%	47062* (40984) 22.6%	98029* (49969) 7.9%
24	231* (190) 2.2%	579* (199) 50.5%	19* (8) 18.1%	830* (294) 6.9%	8876* (6334) 2.9%	102911* (35470) 56.1%	35767* (18789) 38.7%	147554* (41556) 25.5%
25	365* (239) 8.8%	544 (90) 51.2%	32* (25) 26.7%	940* (238) 17.6%	12655* (9300) 9.1%	132299 (20154) 51.6%	48937* (30396) 39.8%	193891 (33868) 37.4%
26	914* (284) 22.2%	705 (162) 44.9%	193* (67) 90.4%	1812 (332) 30.7%	45308* (14277) 32.9%	150815* (41430) 53.6%	193890* (61422) 93.7%	390012 (76201) 62.3%
27	3929 (916) 21.7%	838 (170) 44.7%	193* (72) 61.0%	4960 (853) 24.4%	103902 (21662) 21.7%	161451 (39555) 44.7%	235823* (70333) 68.2%	501175 (80058) 42.3%
28	2298 (386) 37.2%	671 (110) 57.9%	339* (91) 89.2%	3308 (392) 42.9%	80039 (9473) 44.3%	143594 (20406) 55.1%	442270* (114002) 92.8%	665903 (121372) 72.5%
29	345* (232) 34.2%	181* (75) 61.9%	101* (42) 100.0%	628* (264) 44.7%	21404* (13620) 52.2%	50598* (20286) 80.0%	117545* (70259) 100.0%	189547* (76773) 85.5%
30	1232* (448) 18.4%	584* (282) 38.0%	168* (75) 74.9%	1984* (575) 23.4%	48358 (11746) 21.5%	108794* (52717) 36.9%	188813* (76690) 80.8%	345965* (92221) 45.9%
31	50* (39) 5.3%	194* (74) 34.1%	25* (24) 100.0%	269* (84) 17.6%	2188* (1707) 8.8%	49635* (19206) 36.6%	15664* (16901) 100.0%	67487* (24430) 38.3%
32	1237* (523) 14.1%	434* (129) 42.9%	90* (50) 48.8%	1761* (527) 17.6%	42779* (15457) 18.0%	78088* (26051) 37.4%	59706* (31035) 46.3%	180573 (40483) 31.4%
33	514* (179) 12.4%	492* (173) 33.5%	201* (65) 59.7%	1207 (283) 20.3%	22626* (9426) 16.3%	119048* (41032) 38.3%	487752 (94666) 78.5%	629426 (114179) 58.8%

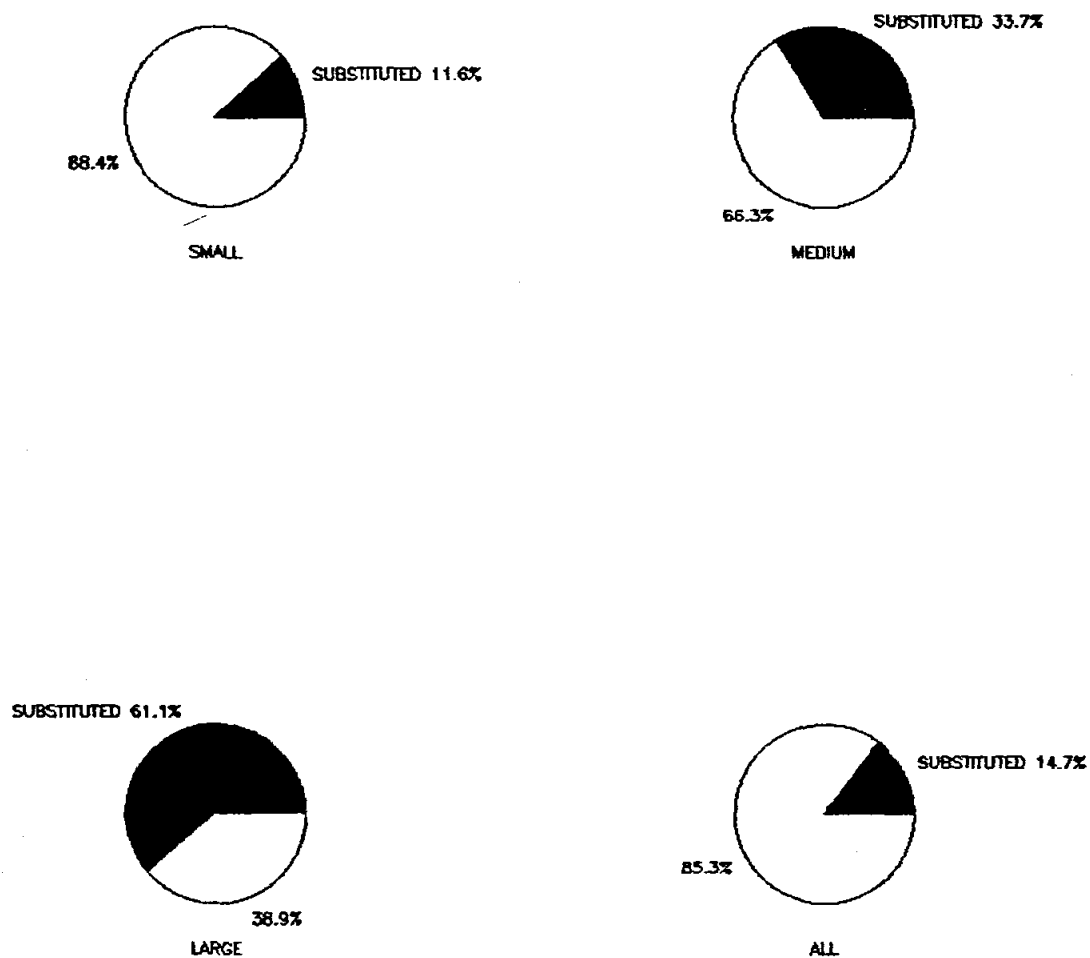
SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	3012 (596) 16.3%	1402 (238) 44.9%	235* (79) 68.0%	4649 (618) 21.1%	100099 (18640) 18.0%	227403 (38719) 38.1%	270171* (101893) 77.0%	597673 (105999) 39.8%
35	4228 (1007) 18.7%	1915 (362) 56.2%	667 (81) 85.1%	6810 (1045) 25.4%	133666 (25199) 22.0%	379558 (56834) 57.4%	996496 (130288) 89.5%	1509719 (158492) 63.4%
36	1934* (605) 27.2%	1366 (184) 50.9%	536 (126) 68.1%	3836 (585) 36.3%	55732 (13303) 24.2%	316898 (40232) 57.3%	913399 (146532) 77.2%	1286029 (158155) 65.4%
37	521* (264) 13.1%	816 (141) 68.6%	328* (85) 78.9%	1666 (342) 29.9%	15583* (7954) 12.3%	164018 (35547) 68.6%	1387350 (231282) 91.6%	1566952 (216612) 83.3%
38	478* (302) 17.8%	321* (92) 33.5%	306* (104) 73.6%	1105* (286) 27.2%	16836* (8629) 16.1%	76763* (29744) 39.5%	385437* (118299) 83.7%	479036 (116868) 63.1%
39	1493* (549) 22.8%	328* (685) 41.1%	36* (26) 10.7%	1856* (839) 24.1%	34940* (12407) 21.1%	70534* (161387) 47.2%	39998* (24337) 19.1%	145472* (161158) 27.7%
41	273* (251) 6.2%	...	...	273* (251) 5.5%	11472* (10554) 9.8%	...	...	11472* (10554) 5.8%
42	962* (377) 4.8%	72* (49) 4.8%	24* (16) 29.4%	1057* (382) 4.9%	35750* (14047) 7.3%	18890* (11975) 7.3%	27982* (20103) 37.4%	82622* (27818) 10.1%
45	23* (34) .7%	55* (46) 9.4%	98* (45) 66.6%	177* (75) 4.4%	1514* (2181) 2.0%	8070* (6702) 7.4%	226538* (80730) 85.7%	236122* (81343) 52.3%
48	...	61* (47) 6.7%	3* (4) 10.1%	64* (48) .4%	...	11000* (8392) 6.2%	13226* (14092) 18.9%	24226* (17160) 3.6%
49	1061* (576) 12.9%	786* (292) 42.2%	124* (65) 71.9%	1971* (698) 19.2%	42724* (19298) 15.9%	182718* (68929) 42.9%	103105* (46434) 70.3%	328547* (99193) 39.0%
50	1682* (692) 5.5%	104* (88) 5.8%	...	1786* (694) 5.6%	39844* (15990) 6.3%	21161* (16297) 7.5%	...	61004* (19819) 6.7%
51	591* (472) 6.5%	...	...	591* (472) 6.3%	20805* (17108) 11.2%	...	...	20805* (17108) 9.8%
55	1859* (713) 9.8%	...	...	1859* (713) 9.5%	47137* (22281) 15.3%	...	...	47137* (22281) 11.6%
72	4766 (894) 23.1%	...	13* (19) 100.0%	4779 (895) 22.4%	67191 (15228) 17.7%	...	10670* (15114) 100.0%	77861* (22207) 16.5%
73	2185* (685) 13.2%	673* (177) 45.2%	196* (113) 57.5%	3055 (697) 16.6%	66957* (22746) 15.9%	164781* (46172) 47.1%	217588* (94537) 66.2%	449326 (93049) 40.8%
75	5108* (1550) 19.5%	...	...	5108* (1550) 19.5%	73187* (24554) 17.7%	...	...	73187* (24554) 17.4%
76	839* (831) 8.6%	123* (94) 100.0%	...	962* (864) 9.7%	14005* (13184) 7.8%	24341* (19716) 100.0%	...	38346* (28619) 18.9%
80	901* (445) 31.7%	1026 (229) 47.4%	1321 (199) 64.1%	3248 (546) 46.0%	29717* (15348) 29.2%	248494* (62214) 46.5%	2058182 (261382) 68.1%	2336393 (274645) 63.9%
ALL	52221 (2756) 11.7%	16876 (889) 34.1%	5766 (338) 61.2%	74863 (2992) 14.8%	1455216 (89065) 13.2%	3570460 (186927) 36.5%	9024198 (363943) 72.4%	14049874 (441721) 42.2%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

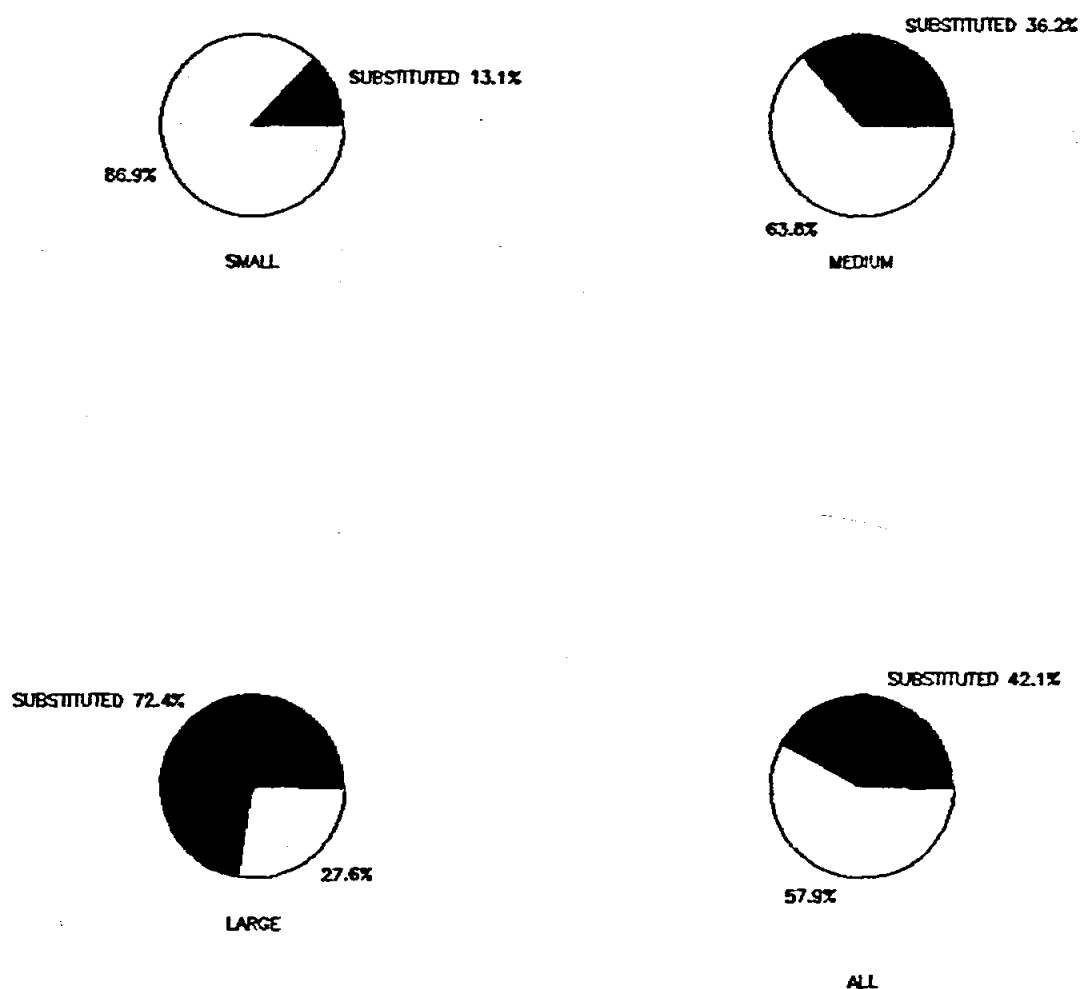
**FIGURE IV - 41**  
**PLANTS WHERE CHEMICALS WERE SUBSTITUTED**  
 (NOES 1861-1883)



**FIGURE IV - 42**  
**SUBSTITUTION OF CHEMICAL MATERIALS BY PLANT SIZE**  
**(NOES 1981-1983)**



**FIGURE IV - 43**  
**CHEMICAL SUBSTITUTION BY WORKFORCE**  
**PROPORTION AND PLANT SIZE**  
**(NOES 1981-1983)**



**NOES QUESTIONNAIRE ITEM NO. 39**  
**Chemical Substitutions Made to Reduce Worker Exposure**

**Intent**

The intent of this question was to determine if a chemical substitution was made for the primary purpose of reducing or eliminating worker exposure to specific chemical agents.

This item was displayed on the questionnaire as:

39. Were any of these substitutions made for the primary purpose of reducing employee exposures?

- 1 Yes
- 2 No

**Notes**

Exchanges of raw materials, ingredients, intermediates, or finished (tradename) products for the primary purpose of protecting employee health were considered affirmative responses.

Substitutions made due to regulatory requirements or a ban on the production, trade, or marketing of a specific chemical agents was also an affirmative response.

Substitutions or exchanges made for economic or any reasons other than those relating to worker health were considered a negative response to this question.

**Analysis**

One analysis of the responses to question 39 is presented.

Response 39.1 - Substitutions made to reduce employee exposure.

The estimates of the plants which have substituted chemical agents for the express purpose of reducing or eliminating worker exposure to specific agents, and workers in those plants (by number and proportion of the total) are displayed in Figures IV-44, IV-45, IV-46, IV-47, IV-48, and IV-49, and Tables IV-3 and IV-44.

Figure IV-44	Chemical substitution to reduce occupational exposure (by major industrial group)
Figure IV-45	Chemical substitution to reduce occupational exposure (by 2-digit SIC)
Figure IV-46	Substitution of chemicals to reduce worker exposure (by major industrial group)
Figure IV-47	Substitution of chemicals to reduce worker exposure (by 2-digit SIC)
Figure IV-48	Plants reducing worker exposure by substituting chemical materials (by major industrial group)

**Figure IV-49**

**Workers in plants where occupational exposure was reduced by chemical substitution**

**Table IV-43**

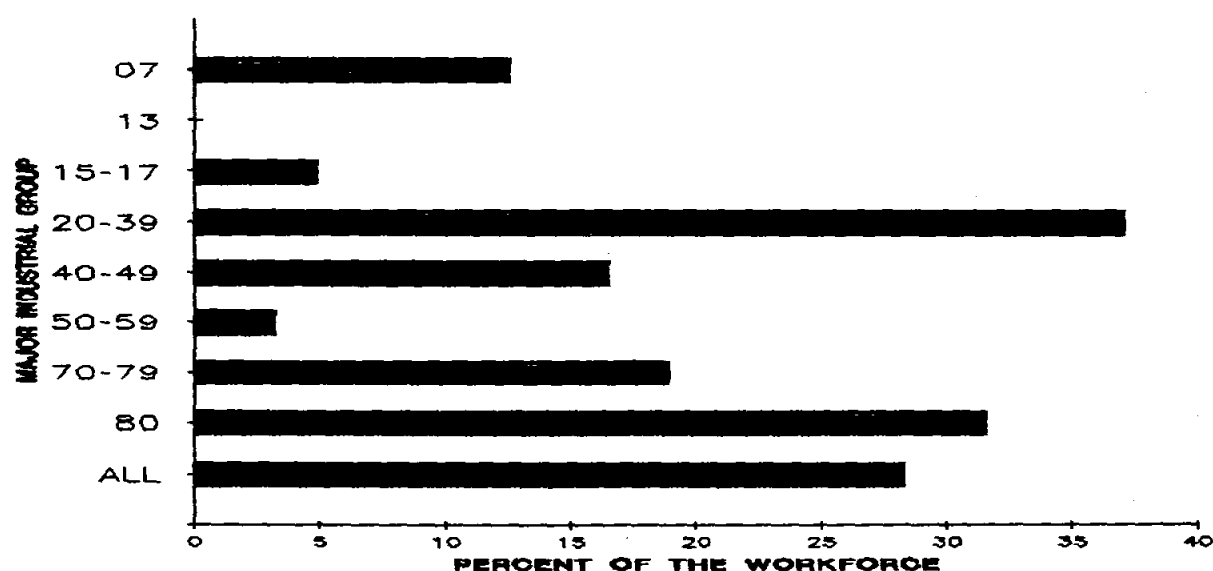
**Number and percent of plants and employees in plants which have substituted chemicals to reduce worker exposure (by major industrial group)**

**Table IV-44**

**Number and percent of plants and employees in plants which have substituted chemicals to reduce worker exposure (by 2-digit SIC)**



**FIGURE IV - 44**  
**CHEMICAL SUBSTITUTION TO REDUCE OCCUPATIONAL EXPOSURE**  
**(NOES 1981-1983)**



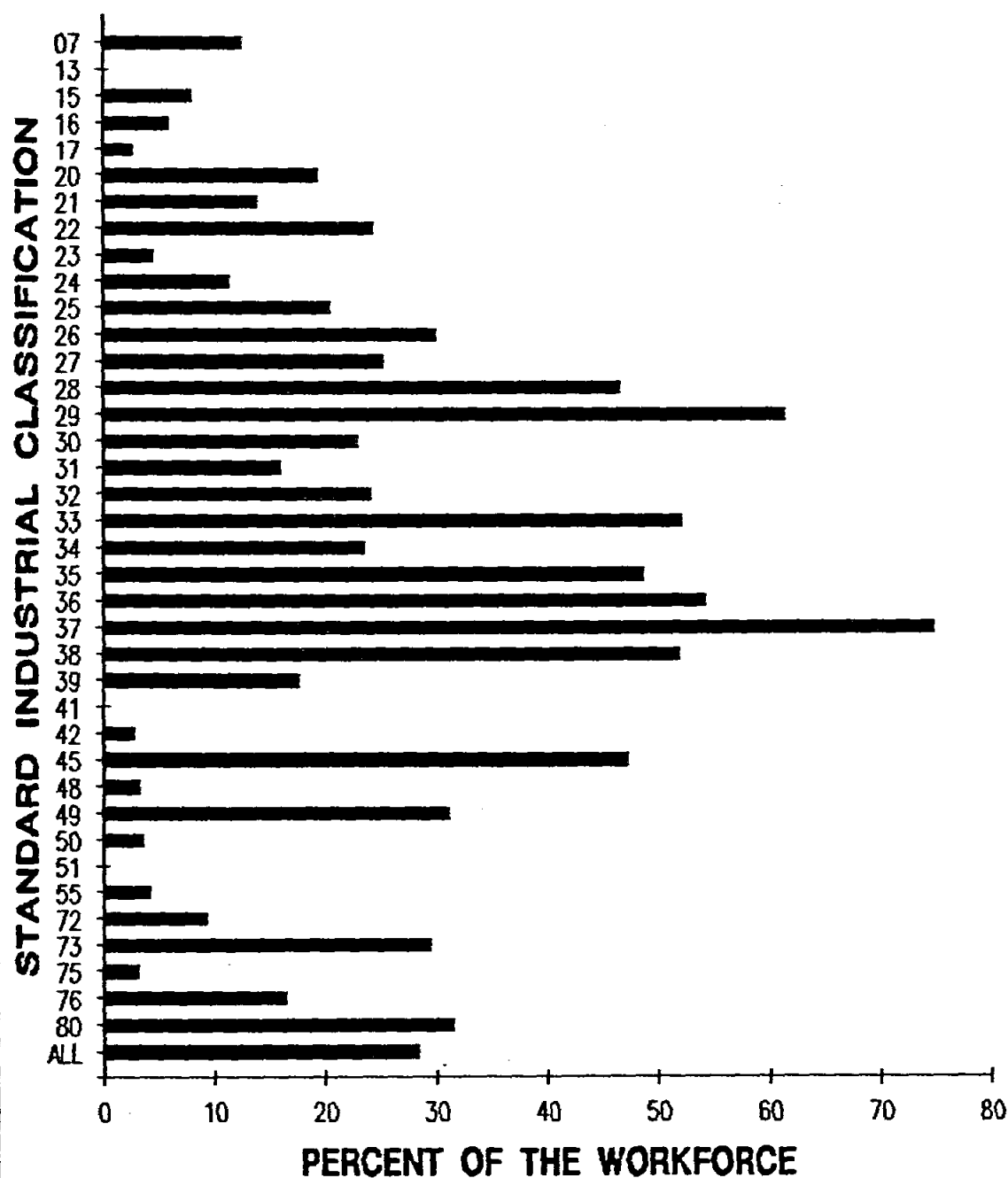
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-43

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 HAVE SUBSTITUTED CHEMICALS TO REDUCE WORKER EXPOSURE

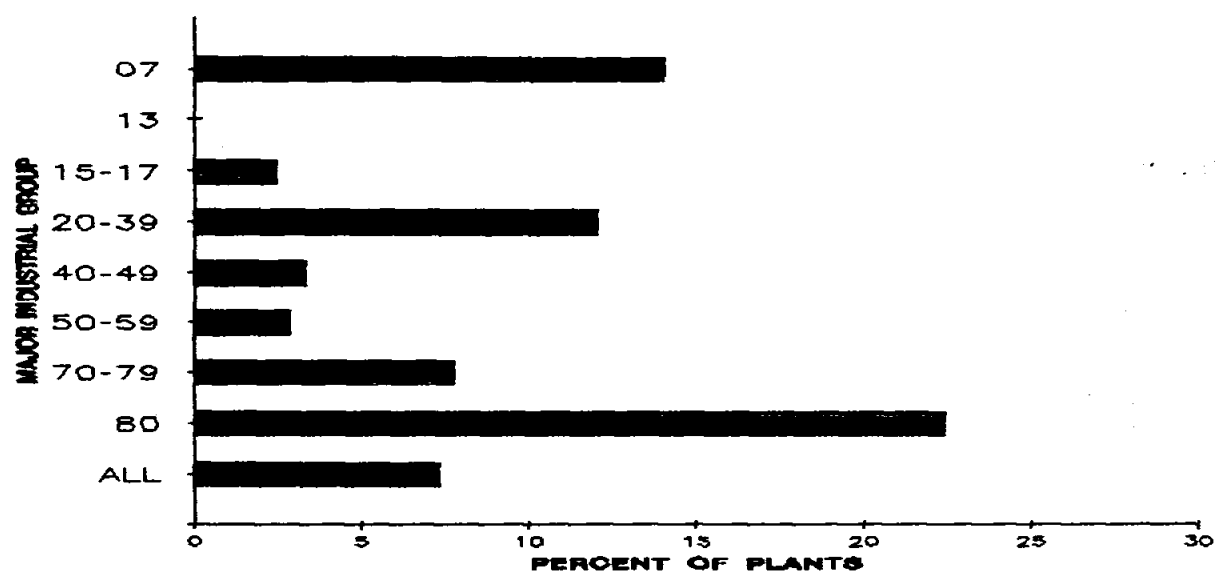
MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	793* (489) 14.2%	...	...	793* (489) 14.1%	14097* (8608) 13.6%	...	...	14097* (8608) 12.7%
13	...	...	...	...	...	...	...	...
15-17	2335* (754) 2.5%	153* (93) 3.7%	25* (29) 10.5%	2514* (728) 2.5%	73112* (19022) 3.5%	30515* (16866) 4.1%	49912* (25611) 21.1%	153539 (31655) 5.0%
20-39	12798 (1462) 8.4%	7552 (660) 23.8%	2842 (195) 45.3%	23192 (1562) 12.1%	441494 (59864) 9.6%	1621683 (160130) 25.4%	5106574 (293563) 61.8%	7169750 (399888) 37.2%
40-49	1043* (470) 2.0%	779* (285) 13.3%	172* (63) 36.8%	1995* (577) 3.4%	38951* (15710) 2.7%	183213* (68520) 15.9%	302692* (92915) 52.8%	524856 (122437) 16.6%
50-59	1678* (840) 2.9%	104* (88) 3.9%	...	1783* (853) 2.9%	29915* (15820) 2.7%	21161* (16297) 5.2%	...	51075* (23162) 3.3%
70-79	5249* (1939) 7.2%	518* (157) 22.1%	178* (116) 50.4%	5946* (1871) 7.8%	87809* (32015) 6.3%	127581* (36994) 27.5%	202056* (96529) 59.5%	417446 (95385) 19.0%
80	316* (319) 11.1%	593 (135) 27.4%	684 (171) 33.2%	1593 (349) 22.5%	3161* (3189) 3.1%	132572* (34705) 24.6%	1023702 (207970) 33.9%	1159435 (207788) 31.7%
ALL	24213 (2781) 5.4%	9700 (759) 19.4%	3902 (292) 41.3%	37815 (2810) 7.4%	688538 (74511) 6.2%	2116724 (182920) 21.5%	6684936 (384757) 53.6%	9490199 (478318) 28.4%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE IV - 45**  
**CHEMICAL SUBSTITUTION TO REDUCE OCCUPATIONAL EXPOSURE**  
 (NCES 1981-1983)



**FIGURE IV - 46**  
**SUBSTITUTION OF CHEMICALS TO REDUCE WORKER EXPOSURE**  
**(NOES 1981-1983)**



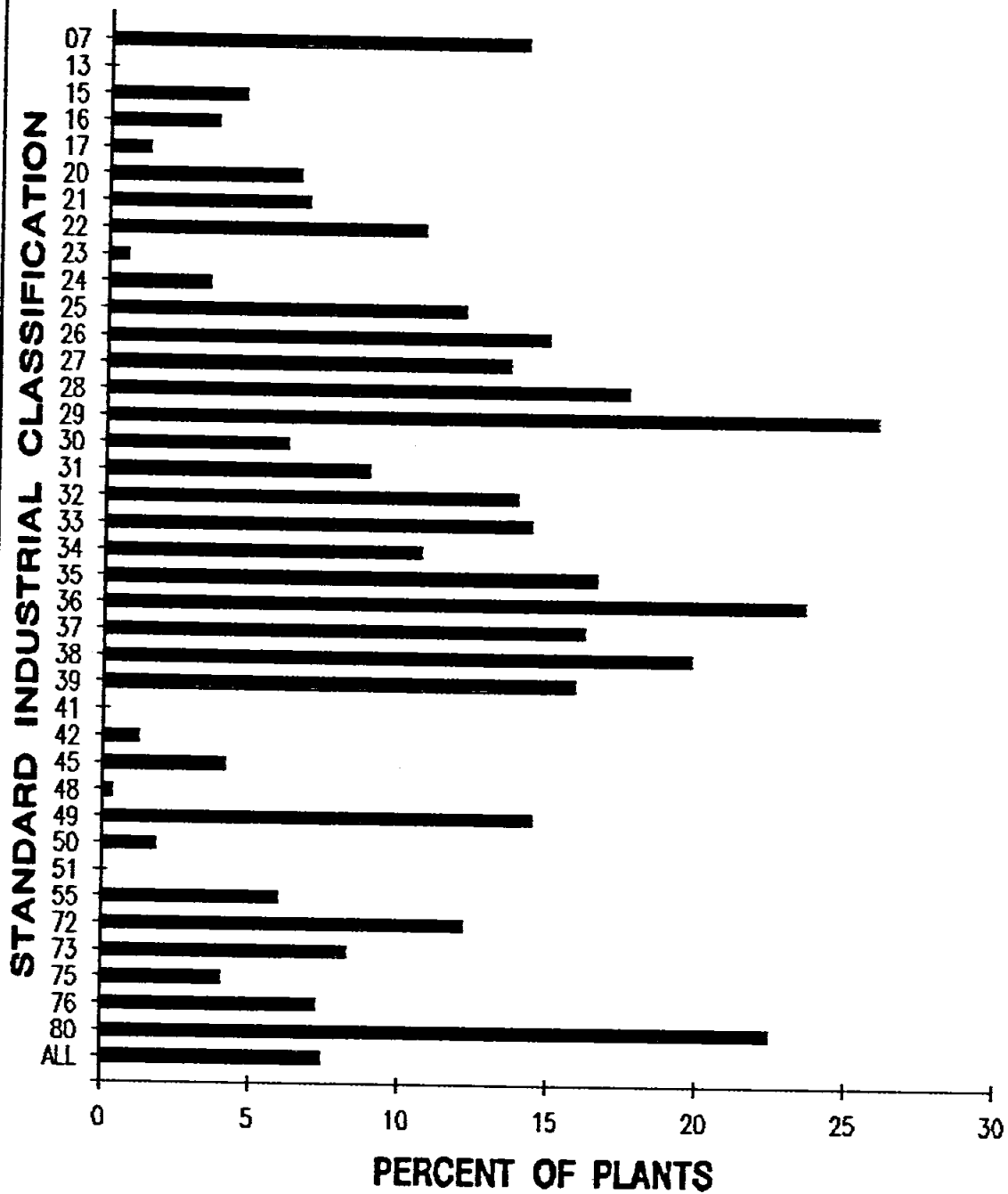
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
HAVE SUBSTITUTED CHEMICALS TO REDUCE WORKER EXPOSURE

SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	793* (489) 14.2%	...	...	793* (489) 14.1%	14097* (8608) 13.6%	...	...	14097* (8608) 12.7%
13	...	...	...	...	...	...	...	...
15	1177* (473) 4.7%	16* (14) 1.4%	10* (4) 7.4%	1203* (473) 4.6%	32826* (10220) 5.8%	3106* (2726) 1.6%	36379* (12499) 27.0%	72311 (14836) 8.1%
16	418* (406) 3.7%	32* (30) 2.9%	15* (29) 14.4%	466* (408) 3.7%	13158* (10460) 4.6%	9667* (8879) 4.7%	13534* (21494) 13.4%	36358* (20966) 6.1%
17	739* (376) 1.3%	105* (95) 5.5%	...	845* (335) 1.4%	27128* (11283) 2.2%	17742* (15978) 5.4%	...	44870* (16125) 2.8%
20	273* (180) 2.4%	500* (196) 15.5%	209* (110) 37.3%	982 (233) 6.5%	13242* (9763) 3.4%	120530* (36297) 17.9%	169850* (82728) 34.5%	303623* (84806) 19.5%
21	...	...	7* (11) 9.4%	7* (11) 6.8%	...	...	16019* (23625) 14.3%	16019* (23625) 14.1%
22	120* (95) 4.1%	328* (106) 20.7%	69* (48) 23.0%	517* (137) 10.7%	8653* (6282) 8.2%	73627* (26056) 21.2%	92707* (59949) 35.5%	174986* (75654) 24.5%
23	...	60* (22) 1.9%	47* (41) 19.4%	107* (45) .7%	...	11297* (4497) 1.9%	47062* (40984) 22.6%	58359* (41985) 4.7%
24	231* (190) 2.2%	166* (96) 14.5%	19* (8) 18.1%	416* (236) 3.5%	8876* (6334) 2.9%	22258* (12462) 12.1%	35767* (18789) 38.7%	66901* (25719) 11.5%
25	316* (231) 7.6%	300* (153) 28.3%	29* (25) 24.0%	645* (251) 12.1%	9961* (7513) 7.2%	69104* (39340) 26.9%	28020* (27305) 22.8%	107085* (48053) 20.7%
26	436* (185) 10.6%	384* (125) 24.5%	60* (37) 28.0%	879* (222) 14.9%	25605* (12016) 18.6%	66390* (24189) 23.6%	96186* (36941) 46.5%	188181 (44699) 30.1%
27	2265* (710) 12.5%	372* (118) 19.9%	129* (62) 40.9%	2767* (725) 13.6%	64905* (16981) 13.6%	73583* (28108) 20.4%	162979* (61915) 47.1%	301467 (69516) 25.4%
28	796* (298) 12.9%	370* (127) 31.9%	192* (72) 50.4%	1357 (321) 17.6%	27337* (7468) 15.1%	86235* (29034) 33.1%	314785* (105880) 66.1%	428356* (109603) 46.7%
29	176* (181) 17.4%	120* (47) 41.0%	69* (40) 68.4%	365* (200) 26.0%	11069* (11377) 27.0%	34779* (14413) 55.0%	90619* (69338) 77.1%	136466* (71944) 61.5%
30	176* (125) 2.6%	249* (165) 16.2%	103* (48) 46.2%	529* (210) 6.2%	11862* (8181) 5.3%	40751* (27115) 13.8%	121377* (49195) 51.9%	173990* (53643) 23.1%
31	50* (39) 5.3%	86* (63) 15.1%	...	136* (79) 8.9%	2188* (1707) 8.8%	26350* (19103) 19.5%	...	28537* (19427) 16.2%
32	1043* (535) 11.8%	259* (119) 25.6%	86* (56) 46.9%	1387* (545) 13.9%	33933* (16334) 14.3%	49195* (20592) 23.5%	56098* (36137) 43.5%	139226* (47812) 24.2%
33	285* (179) 6.9%	375* (131) 25.6%	193* (69) 57.3%	853* (241) 14.4%	7766* (4601) 5.6%	79208* (25511) 25.5%	473246 (96711) 76.1%	560220 (103619) 52.3%

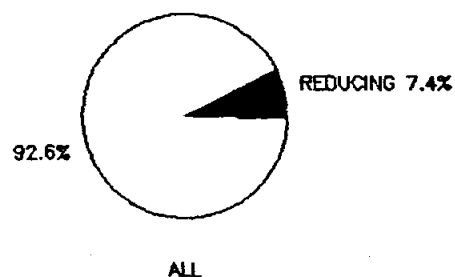
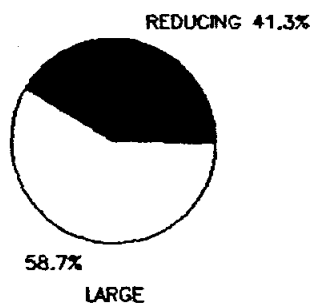
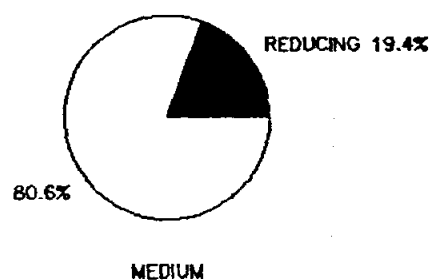
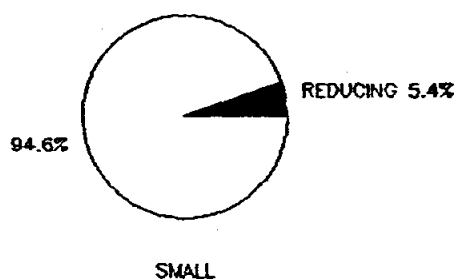
SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	1488* (384) 8.0%	738* (188) 23.6%	128* (56) 36.9%	2354 (438) 10.7%	51260* (14029) 9.2%	134059* (37413) 22.5%	171308* (94331) 48.8%	356627* (111536) 23.7%
35	2538* (807) 11.2%	1400 (242) 41.1%	522 (90) 66.6%	4461 (838) 16.6%	92820* (24787) 15.3%	274525 (42308) 41.5%	793799 (107219) 71.3%	1161144 (116899) 48.8%
36	1157* (497) 16.3%	898 (181) 33.4%	440* (123) 55.9%	2495 (501) 23.6%	31687 (7652) 13.7%	233272 (45384) 42.2%	804986 (137584) 68.1%	1069945 (145794) 54.4%
37	145* (115) 3.7%	482* (136) 40.5%	279* (74) 67.1%	906 (183) 16.2%	9002* (7146) 7.1%	119903* (34231) 50.1%	1281495 (216422) 84.6%	1410400 (209029) 75.0%
38	352* (285) 13.1%	218* (80) 22.8%	234* (75) 56.3%	804* (263) 19.8%	12657* (8363) 12.1%	52332* (22849) 26.9%	329739* (100472) 71.6%	394727* (99210) 52.0%
39	950* (377) 14.5%	246* (542) 30.9%	26* (26) 7.7%	1223* (620) 15.9%	18671* (8011) 11.3%	54287* (135279) 36.3%	20532* (20670) 9.8%	93490* (139150) 17.8%
41	...	...	...	...	...	...	...	...
42	258* (216) 1.3%	16* (16) 1.1%	9* (9) 11.6%	284* (215) 1.3%	8964* (6415) 1.8%	6910* (6767) 2.7%	8340* (8340) 11.1%	24214* (12696) 2.9%
45	23* (34) .7%	55* (46) 9.4%	88* (45) 59.8%	166* (75) 4.2%	1514* (2181) 2.0%	8070* (6702) 7.4%	204453* (83528) 77.4%	214037* (84149) 47.4%
48	...	56* (47) 6.2%	3* (4) 10.1%	59* (47) .4%	...	9956* (8286) 5.6%	13226* (14092) 18.9%	23182* (16342) 3.4%
49	762* (406) 9.3%	653* (272) 35.0%	71* (45) 41.3%	1486* (537) 14.5%	28473* (13774) 10.6%	158277* (65082) 37.2%	76674* (39327) 52.3%	263424* (89905) 31.3%
50	502* (476) 1.7%	104* (88) 5.8%	...	606* (479) 1.9%	12550* (11912) 2.0%	21161* (16297) 7.5%	...	33711* (19596) 3.7%
51	...	...	...	...	...	...	...	...
55	1176* (684) 6.2%	...	...	1176* (684) 6.0%	17364* (10254) 5.6%	...	...	17364* (10254) 4.3%
72	2591* (937) 12.6%	...	13* (19) 100.0%	2604* (938) 12.2%	34005* (12704) 8.9%	...	10670* (15114) 100.0%	44675* (20357) 9.4%
73	973* (636) 5.9%	395* (124) 26.5%	165* (109) 48.4%	1533* (613) 8.3%	30728* (18719) 7.3%	103240* (32481) 29.5%	191386* (91211) 58.2%	325354* (90780) 29.6%
75	1084* (874) 4.1%	...	...	1084* (874) 4.1%	13837* (11427) 3.3%	...	...	13837* (11427) 3.3%
76	601* (776) 6.2%	123* (94) 100.0%	...	724* (800) 7.3%	9238* (11772) 5.2%	24341* (19716) 100.0%	...	33580* (25582) 16.6%
80	316* (319) 11.1%	593 (135) 27.4%	684 (171) 33.2%	1593 (349) 22.5%	3161* (3189) 3.1%	132572* (34705) 24.8%	1023702 (201970) 33.9%	1159435 (207788) 31.7%
ALL	24213 (2495) 5.4%	9700 (675) 19.6%	3902 (296) 41.4%	37815 (2716) 7.5%	688538 (79136) 6.2%	2116724 (145384) 21.7%	6684936 (357097) 53.7%	9490199 (442971) 28.5%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

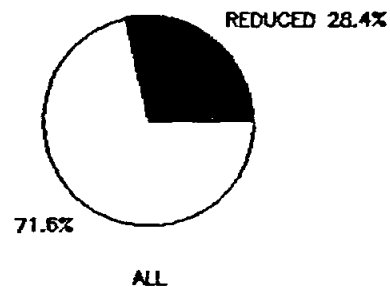
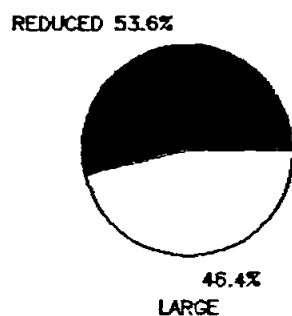
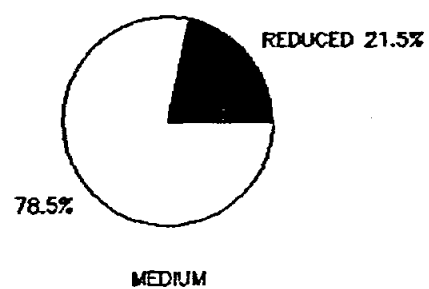
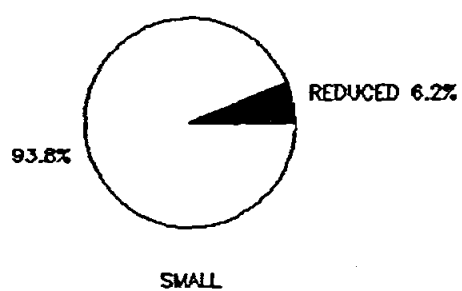
**FIGURE IV - 47**  
**SUBSTITUTION OF CHEMICALS TO REDUCE WORKER EXPOSURE**  
 (NOES 1981-1983)



**FIGURE IV - 48**  
**PLANTS REDUCING WORKER EXPOSURE BY**  
**SUBSTITUTING CHEMICAL MATERIALS**  
**(NOES 1981-1983)**



**FIGURE IV - 49**  
**WORKERS IN PLANTS WHERE OCCUPATIONAL EXPOSURE**  
**WAS REDUCED BY CHEMICAL SUBSTITUTION**  
**(NOES 1981-1983)**





**NOES QUESTIONNAIRE ITEM NO. 40**  
**Chemicals Substituted as a Result of Government Inspection**

**Item**

The intent of this question was to determine if the facility had substituted chemical materials within the past five years as a direct result of government inspection activity.

This item was displayed on the questionnaire as:

40. Were any of these substitutions made as a result of inspections of this facility by federal, state or local authorities?

- 1    Yes  
2    No

**Notes**

An affirmative answer to this question was recorded only when chemical substitutions were made as a consequence of a regulatory visit.

Consultative visits or advice from private consultants, corporate staff, insurance carrier specialists or government employees which resulted in a chemical substitution were excluded.

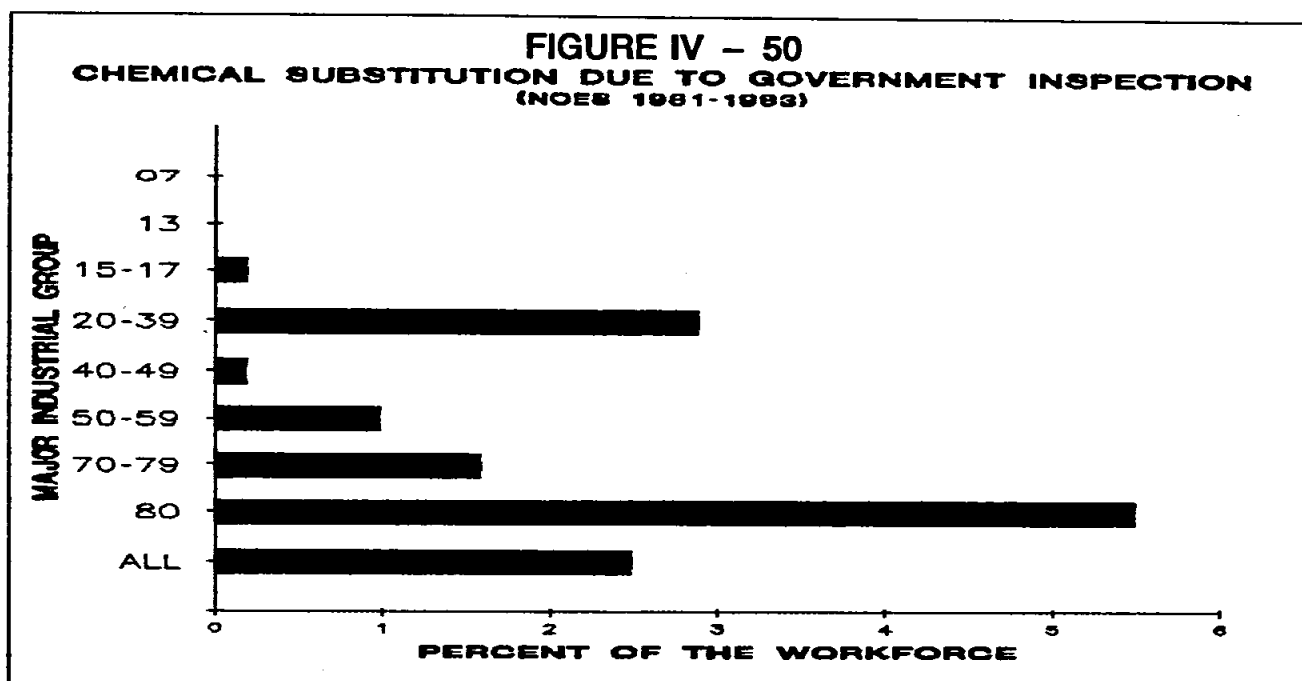
**Analysis**

One analysis of the responses to question 40 is presented.

Response 40.1 - Chemicals substituted as a result of government inspection

The estimates of the plants which substituted chemical materials within the past five years due to government inspection activity, and workers in those plants (by number and proportion of the total) are displayed in Figures IV-50, IV-51, IV-52, IV-53, IV-54, and IV-55, and Tables IV-45 and IV-46.

Figure IV-50	Chemical substitution due to government inspection (by major industrial group)
Figure IV-51	Chemical substitution due to government inspection (by 2-digit SIC)
Figure IV-52	Substitution of chemicals due to government inspection (by major industrial group)
Figure IV-53	Substitution of chemicals due to government inspection (by 2-digit SIC)
Figure IV-54	Workers in plants making chemical substitution due to government inspection
Figure IV-55	Plants making chemical substitutions due to government inspection
Table IV-45	Number and percent of plants and employees in plants which substituted chemicals as a result of government inspection (by major industrial group)
Table IV-46	Number and percent of plants and employees in plants which substituted chemicals as a result of government inspection (by 2-digit SIC)



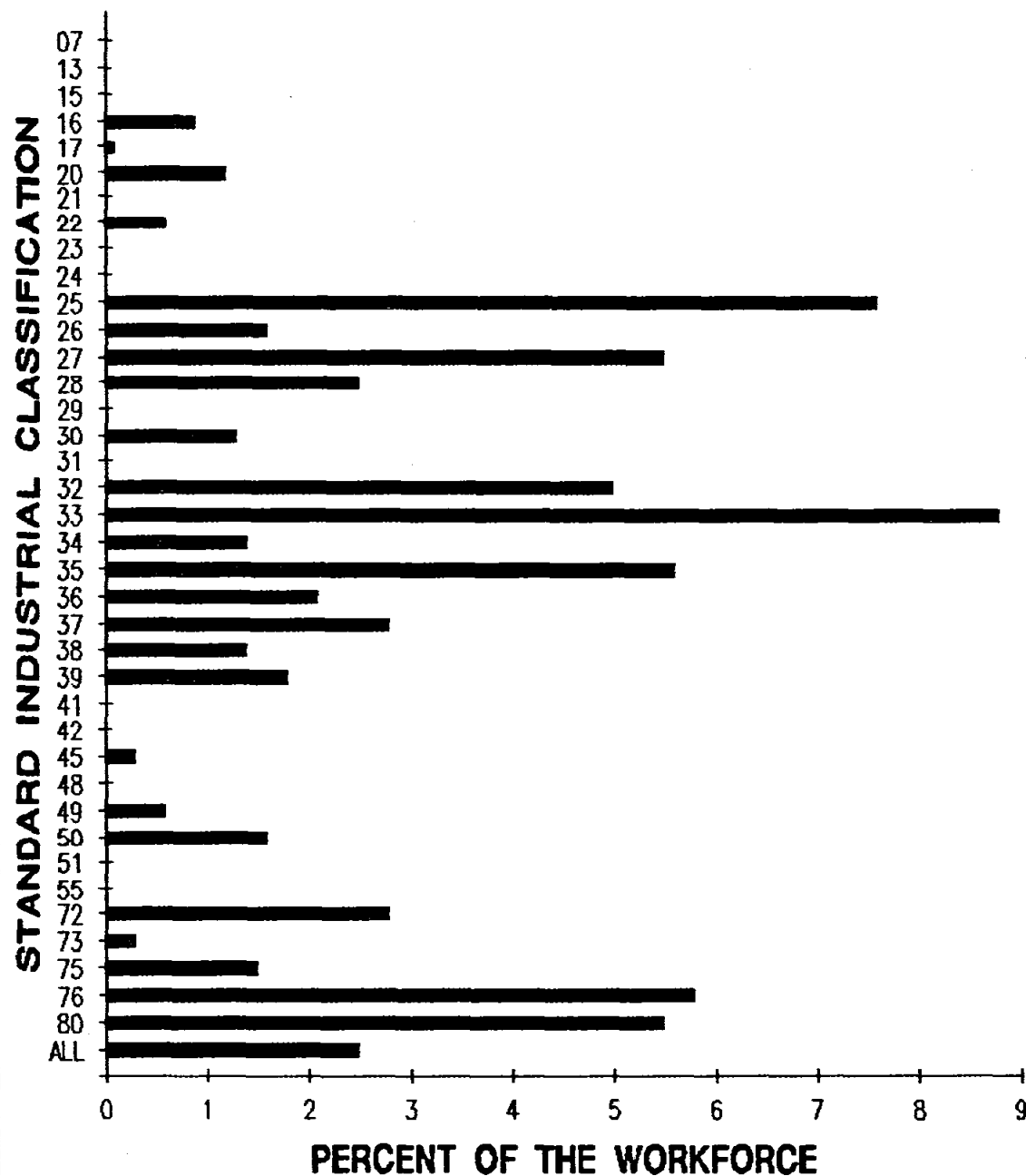
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-45

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
SUBSTITUTED CHEMICALS AS A RESULT OF GOVERNMENT INSPECTION

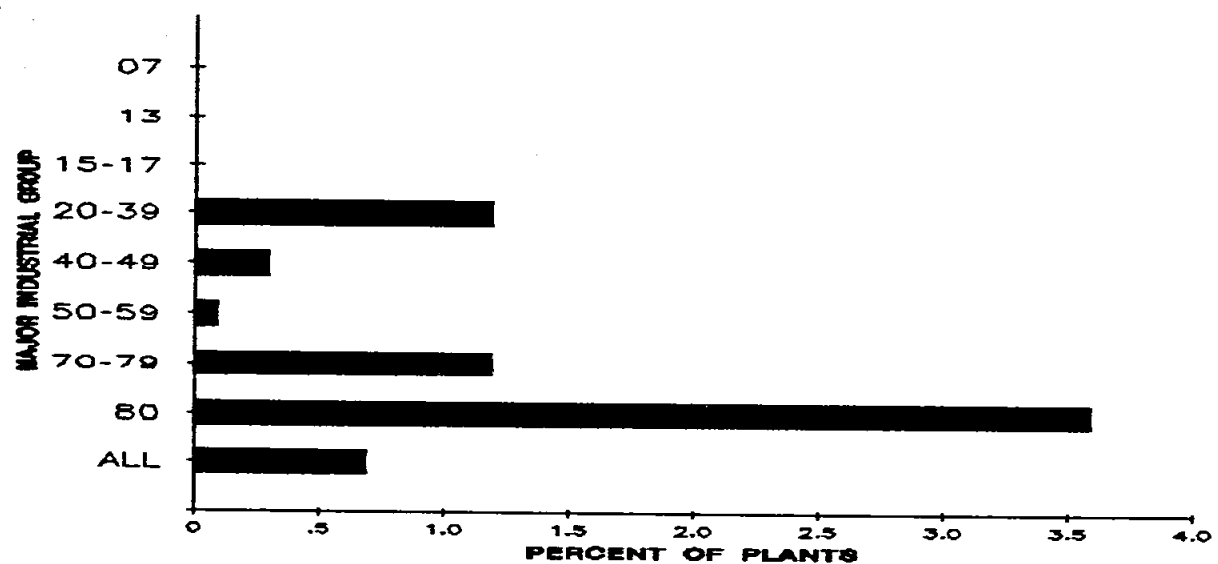
MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...
15-17	20* (17) .0%	...	3* (4) 1.4%	23* (20) .0%	1683* (1410) .1%	...	5099* (5479) 2.2%	6782* (6629) .2%
20-39	1428* (430) .9%	631 (153) 2.0%	248* (75) 4.0%	2307 (454) 1.2%	41418* (16119) .9%	132381 (30809) 2.1%	388591 (17090) 4.7%	562391 (90726) 2.9%
40-49	152* (103) .3%	...	...	152* (103) .3%	6550* (4260) .5%	...	...	6550* (4260) .2%
50-59	...	84* (86) 3.2%	...	84* (86) .1%	...	14784* (15128) 3.6%	...	14784* (15128) 1.0%
70-79	821* (616) 1.1%	87* (78) 3.7%	13* (19) 3.8%	922* (636) 1.2%	12255* (9872) .9%	11669* (10488) 2.5%	10670* (15114) 3.1%	34594* (21661) 1.6%
80	...	149* (98) 6.9%	107* (45) 5.2%	257* (82) 3.6%	...	32897* (23412) 6.2%	167895* (61729) 5.6%	200792* (57729) 5.5%
ALL	2421* (758) .5%	952 (216) 1.9%	373 (89) 3.9%	3746 (798) .7%	61906* (19427) .6%	191731 (42850) 1.9%	572255 (100060) 4.6%	825893 (111014) 2.5%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
...No facilities observed.

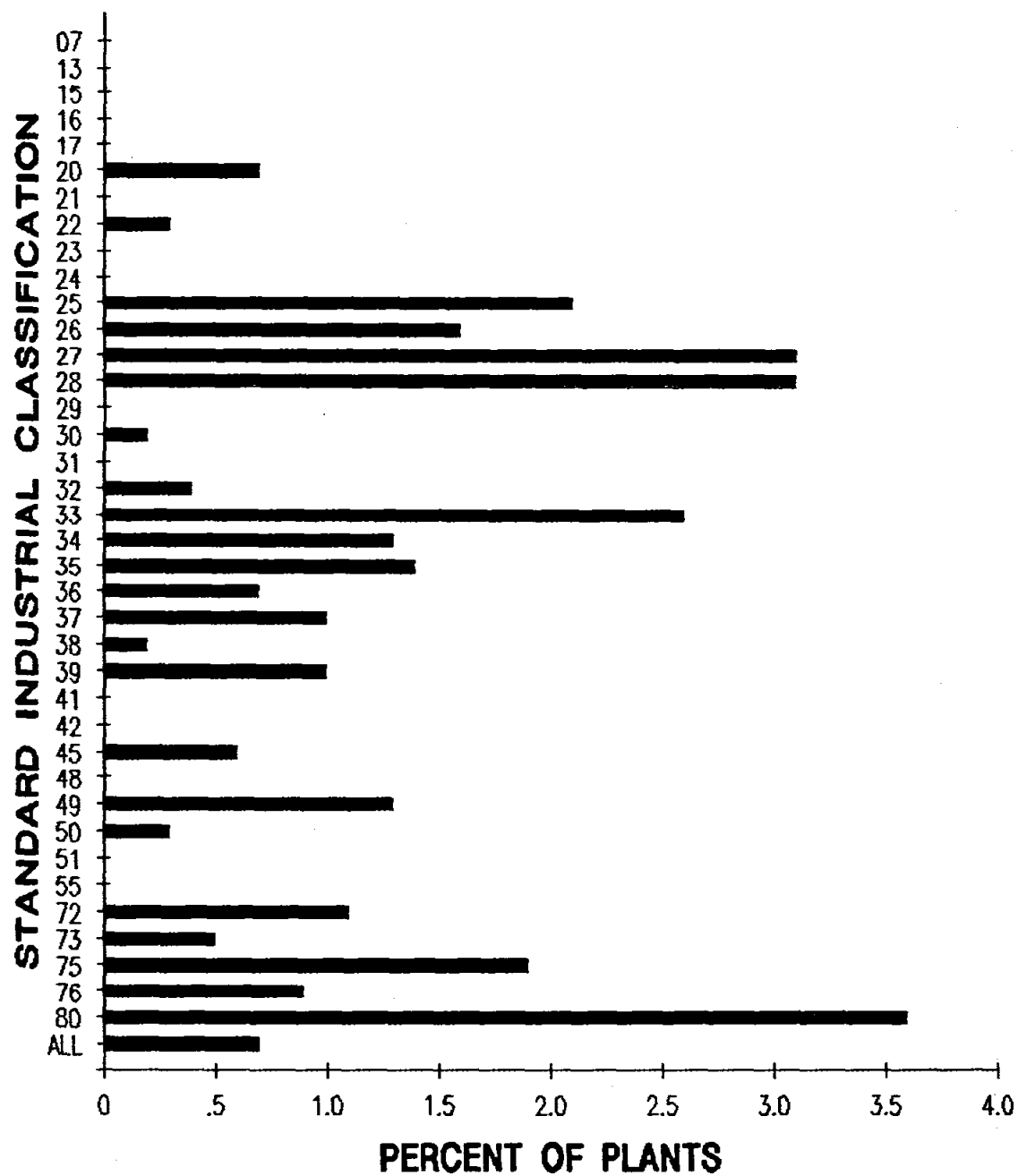
**FIGURE IV - 51**  
**CHEMICAL SUBSTITUTION DUE TO GOVERNMENT INSPECTION**  
**(NOES 1981-1983)**



**FIGURE IV - 52**  
**SUBSTITUTION OF CHEMICALS DUE TO GOVERNMENT INSPECTION**  
**(NOES 1981-1983)**



**FIGURE IV - 53**  
**SUBSTITUTION OF CHEMICALS DUE TO GOVERNMENT INSPECTION**  
 (NOES 1981-1983)



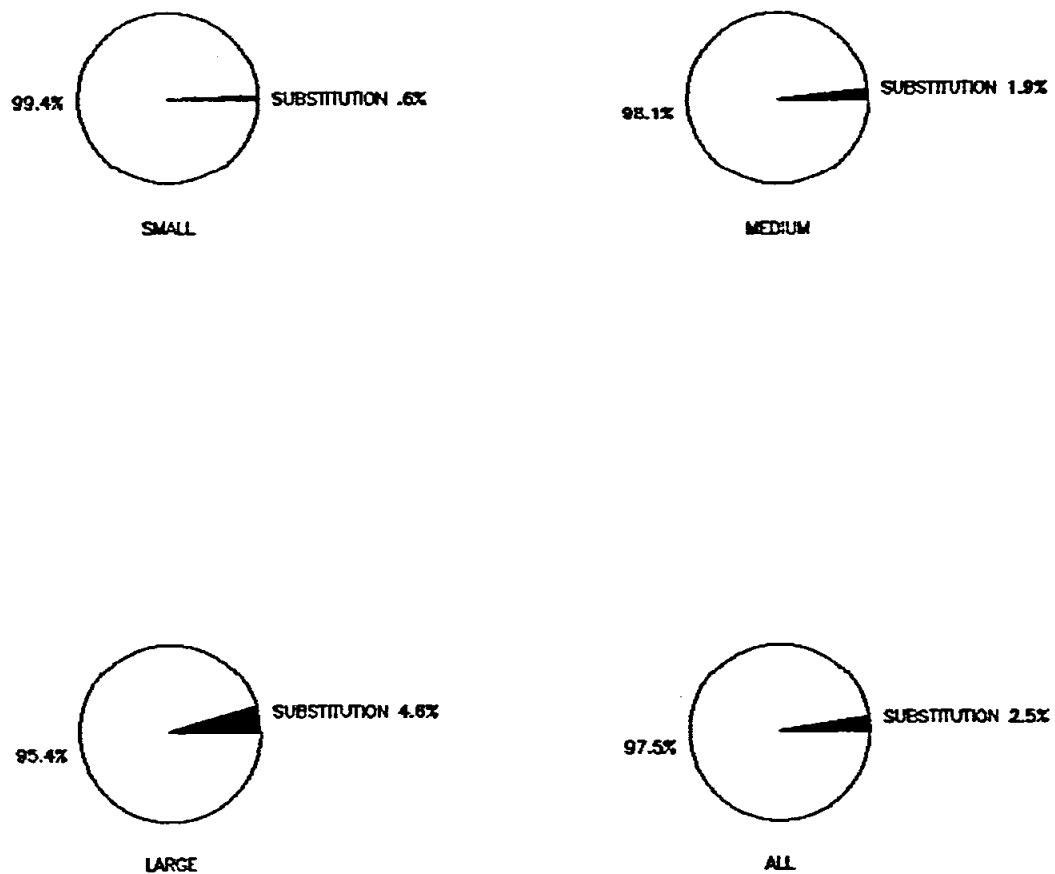
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
SUBSTITUTED CHEMICALS AS A RESULT OF GOVERNMENT INSPECTION

SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...
16	...	...	3* (4) 3.2%	3* (4) .0%	...	...	5099* (5479) 5.0%	5099* (5479) .9%
17	20* (17) .0%	...	...	20* (17) .0%	1683* (1410) .1%	...	...	1683* (1410) .1%
20	58* (67) .5%	50* (33) 1.6%	...	109* (81) .7%	3216* (3712) .8%	15542* (10670) 2.3%	...	18759* (11955) 1.2%
21	...	...	...	...	...	...	...	...
22	...	16* (37) 1.0%	...	16* (37) .3%	...	4232* (9994) 1.2%	...	4232* (9994) .6%
23	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...
25	...	109* (99) 10.3%	3* (4) 2.7%	113* (99) 2.1%	...	18369* (16673) 7.2%	20917* (22806) 17.0%	39286* (29608) 7.6%
26	...	94* (70) 6.0%	...	94* (70) 1.6%	...	10061* (7518) 3.6%	...	10061* (7518) 1.6%
27	594* (287) 3.3%	...	41* (41) 12.8%	635* (291) 3.1%	10703* (4427) 2.2%	...	54795* (46537) 15.8%	65498* (47552) 5.5%
28	205* (191) 3.3%	19* (36) 1.6%	15* (23) 4.0%	238* (203) 3.1%	2046* (1909) 1.1%	6539* (12581) 2.5%	14435* (18899) 3.0%	23020* (23227) 2.5%
29	...	...	...	...	...	...	...	...
30	...	8* (19) .5%	13* (16) 5.7%	21* (14) .2%	...	2149* (5002) .7%	7904* (9778) 3.4%	10053* (7301) 1.3%
31	...	...	...	...	...	...	...	...
32	...	...	37* (28) 20.0%	37* (28) .4%	...	...	28732* (21763) 22.3%	28732* (21763) 5.0%
33	...	125* (106) 8.5%	28* (17) 8.3%	153* (121) 2.6%	...	19553* (16918) 6.3%	74734* (44776) 12.0%	94287* (53640) 8.8%

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	228* (257) 1.2%	58* (34) 1.9%	2* (5) .7%	288* (262) 1.3%	2049* (2312) .4%	16148* (9672) 2.7%	2938* (6037) .8%	21134* (11062) 1.4%
35	235* (187) 1.0%	107* (47) 3.2%	47* (31) 6.0%	389* (201) 1.4%	14900* (14776) 2.5%	29989* (13080) 4.5%	88536* (42260) 8.0%	133425* (48805) 5.6%
36	40* (44) .6%	...	31* (26) 3.9%	71* (60) .7%	3746* (4136) 1.6%	...	37363* (18535) 3.2%	41109* (20347) 2.1%
37	8* (7) .2%	26* (31) 2.2%	22* (14) 5.2%	56* (36) 1.0%	241* (222) .2%	5007* (5891) 2.1%	47880* (26590) 3.2%	53127* (27989) 2.8%
38	...	...	10* (16) 2.4%	10* (16) .2%	...	...	10358* (16947) 2.2%	10358* (16947) 1.4%
39	60* (70) .9%	17* (47) 2.1%	...	77* (81) 1.0%	4516* (5239) 2.7%	4792* (13146) 3.2%	...	9309* (13716) 1.8%
41	...	...	...	...	...	...	...	...
42	...	...	...	...	...	...	...	...
45	23* (34) .7%	...	...	23* (34) .6%	1514* (2181) 2.0%	...	...	1514* (2181) .3%
48	...	...	...	...	...	...	...	...
49	129* (102) 1.6%	...	...	129* (102) 1.3%	5037* (4003) 1.9%	...	...	5037* (4003) .6%
50	...	84* (86) 4.7%	...	84* (86) .3%	...	14784* (15128) 5.2%	...	14784* (15128) 1.6%
51	...	...	...	...	...	...	...	...
55	...	...	...	...	...	...	...	...
72	227* (225) 1.1%	...	13* (19) 100.0%	240* (225) 1.1%	2725* (2701) .7%	...	10670* (15114) 100.0%	13395* (15254) 2.8%
73	100* (112) .6%	...	...	100* (112) .5%	3110* (3485) .7%	...	...	3110* (3485) .3%
75	494* (501) 1.9%	...	...	494* (501) 1.9%	6420* (6514) 1.6%	...	...	6420* (6514) 1.5%
76	...	87* (78) 70.8%	...	87* (78) .9%	...	11669* (10488) 47.9%	...	11669* (10488) 5.8%
80	...	149* (98) 6.9%	107* (45) 5.2%	257* (82) 3.6%	...	32897* (23412) 6.2%	167895* (61729) 5.6%	200792* (57729) 5.5%
ALL	2421* (793) .5%	952* (245) 1.9%	373 (81) 4.0%	3746 (834) .7%	61906* (19949) .6%	191731 (47115) 2.0%	572255 (69606) 4.6%	825893 (89959) 2.5%

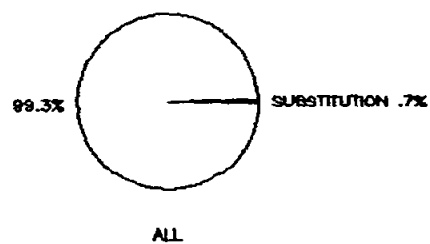
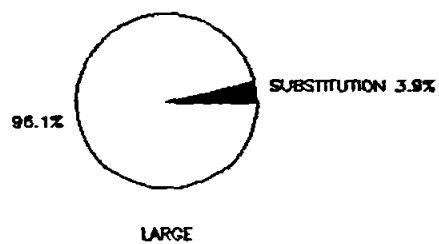
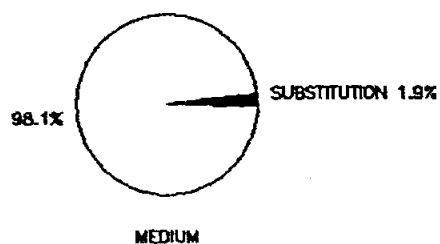
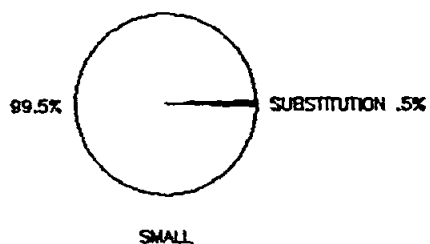
\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE IV - 54**  
**WORKERS IN PLANTS MAKING CHEMICAL**  
**SUBSTITUTIONS DUE TO GOVERNMENT INSPECTION**  
**(NOES 1981-1983)**





**FIGURE IV - 55**  
**PLANTS MAKING CHEMICAL SUBSTITUTIONS**  
**DUE TO GOVERNMENT INSPECTION**  
**(NOES 1981-1983)**



**NOES QUESTIONNAIRE ITEM NO. 41**  
**Process or Equipment Modifications Made in the Past Five Years**

**Intent**

The intent of this question was to determine if the facility had made major modifications of equipment or processes during the past five years.

This item was displayed on the questionnaire as:

41. Have any major equipment or process modifications been made withing the last 5 years?

- 1 Yes
- 2 No (Skip to Question 45)

**Notes**

A "major modification" was considered to be a change in machinery, process(es), equipment, or physical plant layout which was significant enough to change the potential occupational exposure(s) of workers to chemical, physical or biological agents.

Changes made to protect against injury, such as machine guards, were not considered to be major process or equipment modifications within the intent of this question.

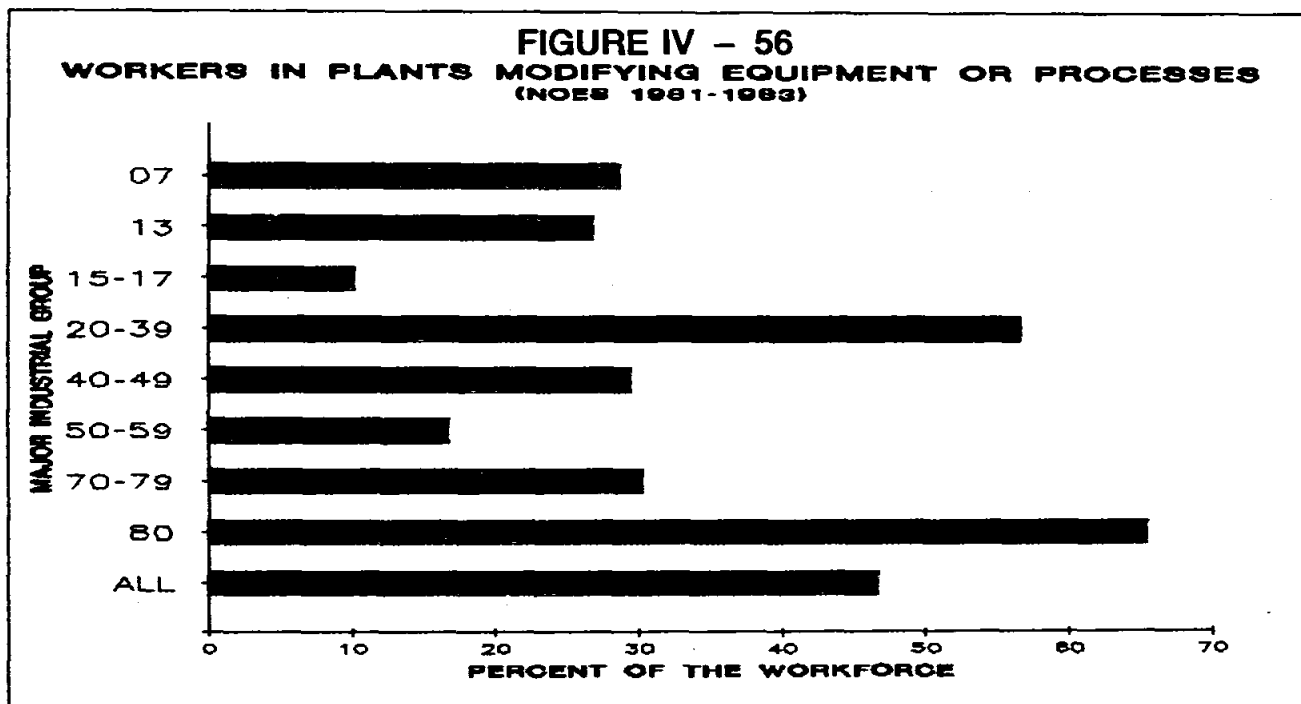
**Analysis**

One analysis of the responses to this question is presented.

Response 41.1 - Major process or equipment modifications made during the past five years

The estimates of the plants which made modifications to equipment or processes during the past five years which were significant enough to change potential worker occupational exposures, and workers in those plants (by number and proportion of the total) are displayed in Figures IV-56, IV-57, IV-58, IV-59, IV-60, and IV-61, and Tables IV-47 and IV-48.

Figure IV-56	Workers in plants modifying equipment or processes (by major industrial group)
Figure IV-57	Workers in plants modifying equipment or processes (by 2-digit SIC)
Figure IV-58	Plants which modified equipment or processes (by major industrial group)
Figure IV-59	Plants which modified equipment or processes (by 2-digit SIC)
Figure IV-60	Workers in plants which modified equipment or processes
Figure IV-61	Plants which modified equipment or processes by plant size
Table IV-47	Number and percent of plants and employees in plants which made equipment or process modifications in the past five years (by major industrial group)
Table IV-48	Number and percent of plants and employees in plants which made equipment or process modifications in the past five years (by 2-digit SIC)



NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-47

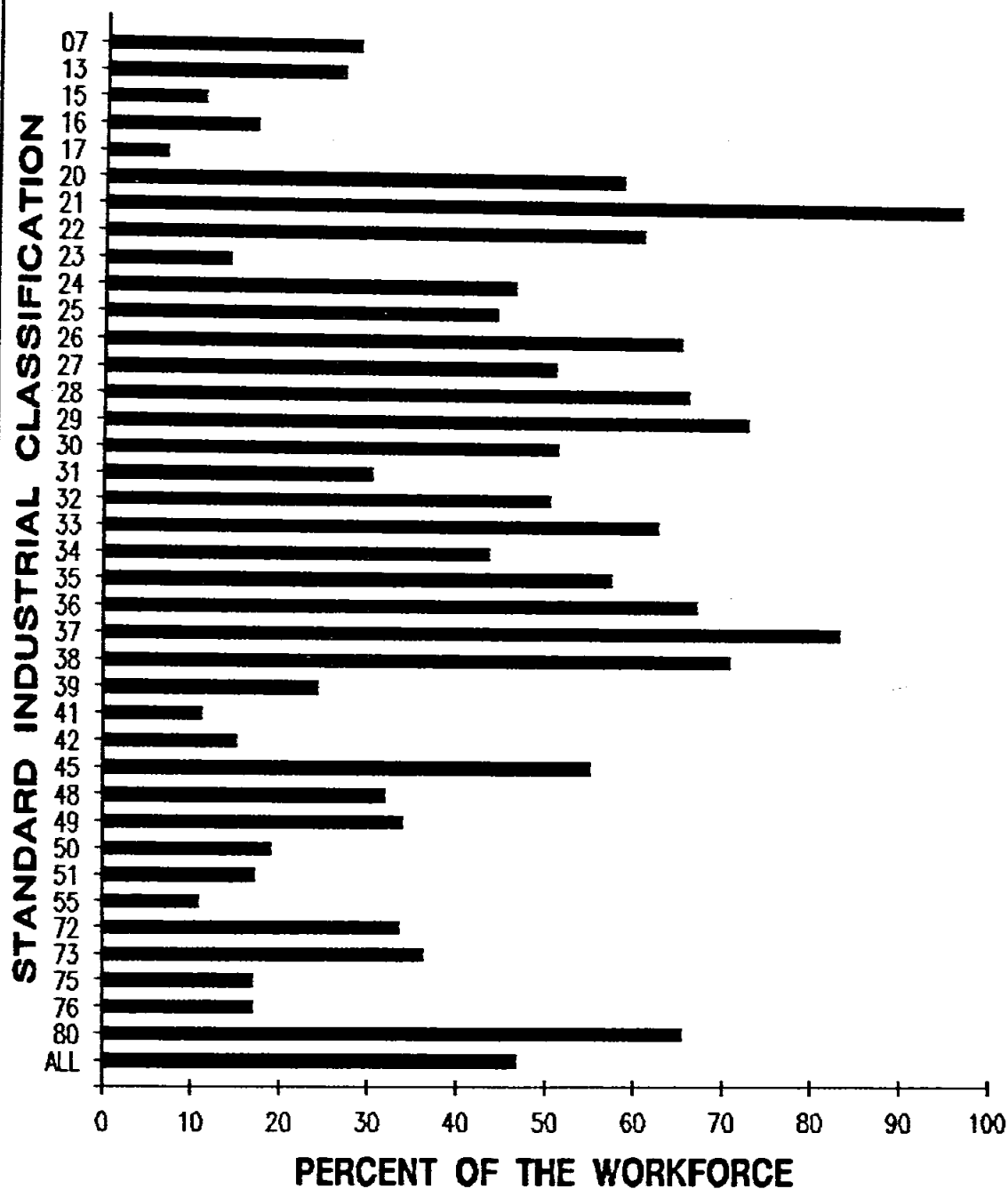
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
MADE EQUIPMENT OR PROCESS MODIFICATIONS IN THE PAST FIVE YEARS

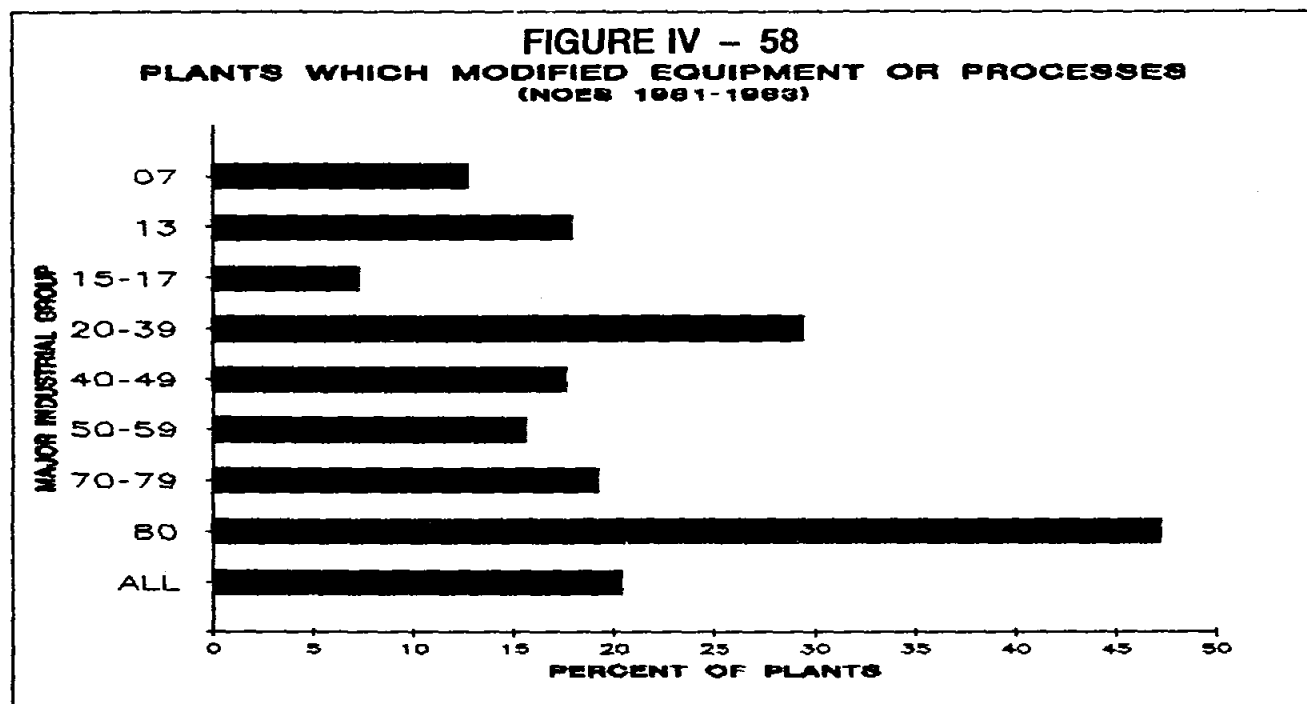
MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	720* (389) 12.9%	...	...	720* (389) 12.8%	31853* (18638) 30.7%	...	...	31853* (18638) 28.8%
13	1349* (577) 15.7%	394* (258) 38.7%	...	1743* (656) 18.0%	35457* (11632) 17.0%	76585* (38588) 44.0%	...	112042* (39717) 27.0%
15-17	6681 (1141) 7.1%	623* (249) 15.0%	24* (18) 9.7%	7328 (1118) 7.4%	165504 (26290) 7.9%	112166* (47451) 15.2%	37352* (23980) 15.8%	315022 (61892) 10.3%
20-39	37475 (2045) 24.5%	14665 (1150) 46.2%	4241 (223) 67.6%	56381 (2105) 29.5%	1303490 (63022) 28.2%	3103814 (246563) 48.6%	6519530 (302663) 78.9%	10926834 (465382) 56.7%
40-49	9085 (1681) 17.1%	1279* (478) 21.9%	165* (57) 35.2%	10528 (1982) 17.7%	328203 (73029) 22.9%	315940* (121927) 27.4%	291210* (96959) 50.8%	935352 (201343) 29.6%
50-59	9152 (1769) 15.7%	408* (242) 15.3%	...	9559 (1706) 15.7%	190565 (34415) 16.9%	68583* (41609) 16.8%	...	259148 (47959) 16.9%
70-79	13511 (2277) 18.5%	902 (214) 38.4%	227* (124) 64.1%	14640 (2361) 19.3%	273641 (61340) 19.6%	164410 (38959) 35.4%	230986* (108158) 68.0%	669036 (124624) 30.4%
80	1148* (453) 40.5%	771* (193) 35.6%	1426 (216) 69.2%	3345 (535) 47.3%	46728* (15061) 46.0%	222370 (54042) 41.6%	2131861 (253946) 70.5%	2400960 (247403) 65.6%
ALL	79120 (4161) 17.6%	19042 (1349) 38.1%	6082 (339) 64.4%	104243 (4355) 20.5%	2375442 (125111) 21.4%	4063867 (292523) 41.2%	9210940 (421624) 73.9%	15650249 (584735) 46.8%

\*Standard error >25% of the estimate. The estimate may be unreliable.

...No facilities observed.

**FIGURE IV - 57**  
**WORKERS IN PLANTS MODIFYING EQUIPMENT OR PROCESSES**  
 (NOES 1981-1983)





NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
MADE EQUIPMENT OR PROCESS MODIFICATIONS IN THE PAST FIVE YEARS

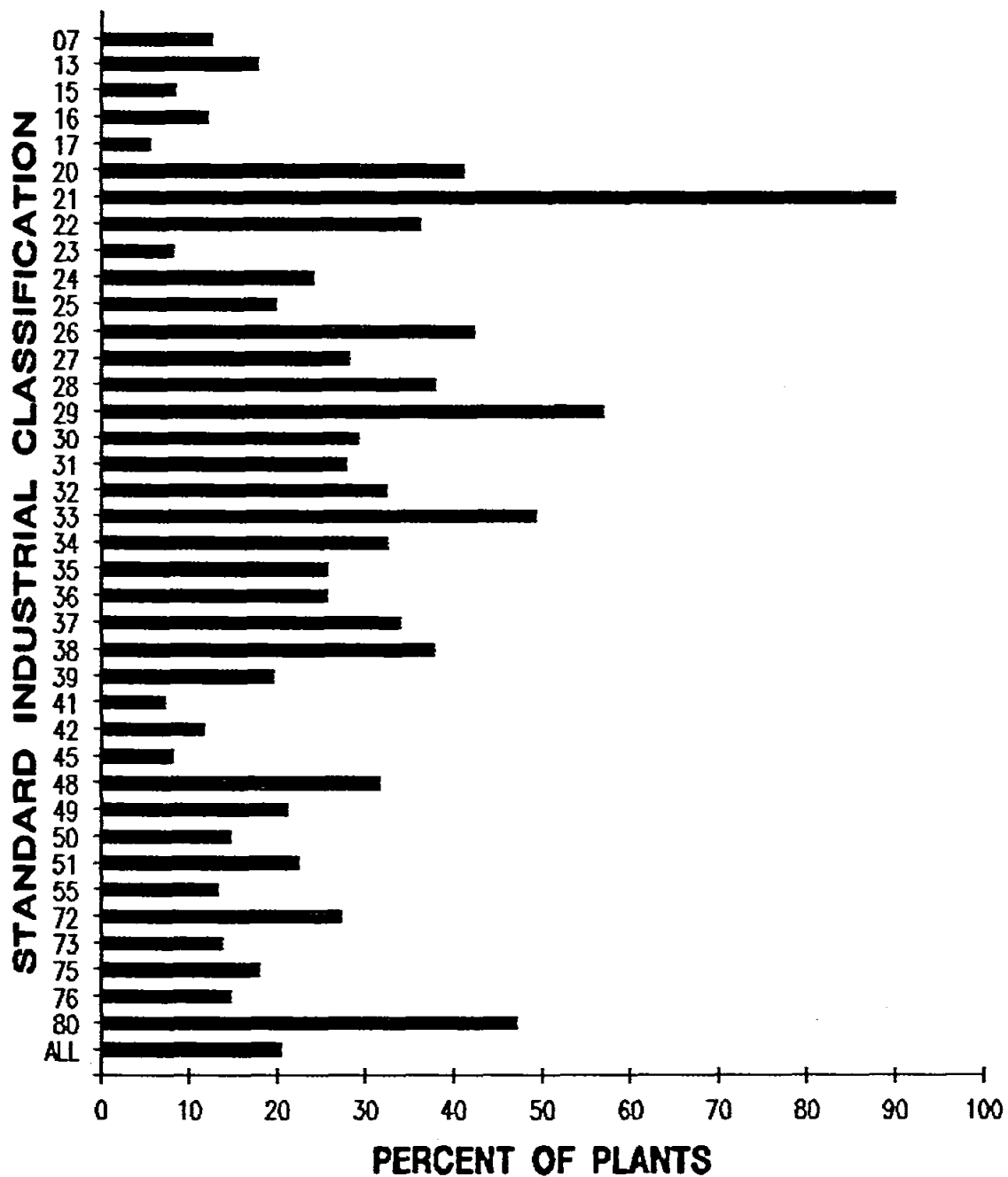
SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	720* (389) 12.9%	---	---	720* (389) 12.8%	31853* (18638) 30.7%	---	---	31853* (18638) 28.8%
13	1349* (577) 15.7%	394* (258) 38.7%	---	1743* (656) 18.0%	35457* (11632) 17.0%	76585* (38588) 44.0%	---	112042* (39717) 27.0%
15	2212 (472) 8.9%	56* (57) 5.0%	20* (17) 14.9%	2287 (480) 8.7%	47219 (8407) 8.4%	21769* (22236) 11.0%	32254* (22957) 23.9%	101242* (33639) 11.3%
16	1187* (521) 10.5%	342* (150) 30.6%	3* (4) 3.2%	1533* (574) 12.3%	39249* (23321) 13.8%	57668* (27260) 27.8%	5099* (5479) 5.0%	102016* (43823) 17.2%
17	3282* (908) 5.6%	226* (148) 11.8%	---	3507* (883) 5.8%	79035 (17453) 6.3%	32729* (22087) 9.9%	---	111765 (22060) 7.1%
20	3964 (681) 34.7%	1922 (317) 59.8%	379* (109) 67.7%	6265 (787) 41.3%	134189 (21062) 34.5%	417146 (63228) 61.9%	360405* (100962) 73.3%	911739 (111886) 58.7%
21	26* (42) 86.5%	---	72* (47) 91.5%	98* (58) 90.1%	1608* (2605) 86.2%	---	108745* (64516) 97.0%	110353* (63911) 96.8%
22	734* (223) 25.0%	787 (139) 49.6%	231* (78) 77.4%	1753 (290) 36.4%	36132* (11799) 34.1%	181499 (33390) 52.3%	218323* (96821) 83.6%	435955* (109595) 61.0%
23	950* (387) 7.6%	279* (93) 9.0%	94* (67) 38.7%	1323* (422) 8.3%	35686* (13848) 8.4%	64510* (24084) 10.6%	77750* (55025) 37.3%	177947* (54871) 14.3%
24	2153* (658) 20.1%	645 (154) 56.2%	104* (74) 100.0%	2902 (701) 24.3%	70563* (21329) 23.2%	107106* (26988) 58.3%	92355* (52501) 100.0%	270024 (66963) 46.6%
25	545* (203) 13.1%	428* (185) 40.3%	103* (74) 86.4%	1076* (274) 20.1%	21844* (8288) 15.7%	103327* (45297) 40.3%	105781* (63252) 86.0%	230951* (78228) 44.5%
26	1626* (484) 39.5%	687* (245) 43.8%	193* (67) 90.4%	2506 (503) 42.5%	66504 (14927) 48.3%	149143* (54751) 53.0%	193890* (61422) 93.7%	409537 (93711) 65.4%
27	4550 (959) 25.1%	997 (208) 53.2%	225* (85) 71.3%	5772 (954) 28.4%	131475 (27903) 27.5%	205631 (45610) 57.0%	271048 (66111) 78.4%	608154 (81997) 51.3%
28	1932 (397) 31.3%	712 (134) 61.4%	296 (67) 78.0%	2941 (397) 38.1%	69347 (15217) 38.4%	155542 (29583) 59.6%	383766 (72169) 80.6%	608656 (82211) 66.3%
29	609* (275) 60.2%	115* (43) 39.3%	77* (45) 76.1%	801* (285) 57.0%	31463* (14125) 76.8%	32727* (12685) 51.7%	97581* (73080) 83.0%	161770* (73159) 72.9%
30	1715* (606) 25.6%	618* (276) 40.2%	155* (69) 69.2%	2488* (686) 29.4%	63914* (19582) 28.4%	135274* (54985) 45.9%	189695* (75187) 81.2%	388883 (80181) 51.6%
31	273* (201) 29.3%	134* (81) 23.5%	22* (20) 87.3%	429* (220) 28.1%	7775* (5242) 31.2%	34433* (21440) 25.4%	11650* (10428) 74.4%	53858* (25924) 30.6%
32	2527* (755) 28.7%	629 (136) 62.2%	104* (54) 56.5%	3260 (747) 32.6%	89277 (19355) 37.6%	127341* (33561) 60.9%	75156* (39860) 58.3%	291774 (54804) 50.7%
33	2096 (406) 50.7%	701* (178) 47.8%	145* (51) 43.0%	2942 (457) 49.5%	86522 (12210) 62.5%	171807 (41484) 55.2%	415727 (71075) 66.9%	674056 (87051) 62.9%

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	5393 (951) 29.1%	1655 (239) 53.0%	140* (57) 40.4%	7187 (931) 32.7%	148787 (17433) 26.8%	312276 (50101) 52.3%	197685* (92613) 56.3%	658748 (111172) 43.8%
35	4753 (810) 21.0%	1647 (220) 48.4%	544 (59) 69.4%	6944 (944) 25.9%	162486 (20572) 26.8%	324862 (44166) 49.1%	887500 (116307) 79.7%	1374847 (125665) 57.7%
36	1097* (422) 15.4%	1024 (152) 38.1%	617 (135) 78.4%	2737 (423) 25.9%	47323* (18313) 20.5%	218625 (35693) 39.6%	1055776 (165039) 89.3%	1321724 (170238) 67.2%
37	648* (269) 16.3%	871 (138) 73.2%	382 (91) 91.8%	1901 (294) 34.1%	38759* (17218) 30.5%	175309 (31487) 73.3%	1354836 (239271) 89.5%	1568903 (232642) 83.4%
38	740* (297) 27.5%	465* (140) 48.6%	337* (107) 81.1%	1542 (384) 38.0%	29683* (10031) 28.4%	114094* (35578) 58.7%	396399* (106923) 86.1%	540176 (124836) 71.1%
39	1144* (522) 17.5%	349* (790) 43.8%	20* (17) 6.0%	1513* (925) 19.7%	30151* (12770) 18.2%	73162* (175015) 49.0%	25466* (19911) 12.2%	128779* (173402) 24.5%
41	273* (251) 6.2%	97* (83) 19.0%	...	370* (276) 7.5%	11472* (10554) 9.8%	11518* (9829) 14.1%	...	22990* (15488) 11.5%
42	2351* (685) 11.7%	160* (93) 10.8%	37* (27) 45.7%	2549* (666) 11.8%	59398 (13958) 12.2%	36654* (18757) 14.2%	30417* (21961) 40.6%	126470 (25863) 15.4%
45	...	249* (210) 42.2%	83* (43) 56.5%	332* (230) 8.3%	...	63345* (57328) 57.9%	186220* (85944) 70.5%	249565* (106080) 55.3%
48	4806* (1246) 32.7%	171* (97) 19.0%	3* (4) 10.1%	4981* (1254) 31.9%	170608* (63343) 40.1%	32922* (19527) 18.7%	13226* (14092) 18.9%	216756* (69683) 32.2%
49	1616* (822) 19.7%	524* (232) 28.1%	41* (25) 23.6%	2180* (910) 21.3%	84790* (42106) 31.5%	141544* (60575) 33.3%	61346* (34258) 41.9%	287680* (100551) 34.2%
50	4393 (947) 14.5%	408* (242) 22.6%	...	4801 (932) 14.9%	107827 (25773) 17.1%	68583* (41609) 24.2%	...	176410* (44211) 19.3%
51	2118* (836) 23.2%	...	...	2118* (836) 22.7%	36979* (12630) 20.0%	...	...	36979* (12630) 17.4%
55	2640* (998) 13.9%	...	...	2640* (998) 13.5%	45759* (15293) 14.8%	...	...	45759* (15293) 11.2%
72	5560 (1166) 27.0%	292* (127) 43.3%	13* (19) 100.0%	5865 (1196) 27.5%	111856 (26809) 29.4%	37125* (17808) 45.2%	10670* (15114) 100.0%	159652* (41193) 33.8%
73	1824* (750) 11.0%	523* (138) 35.1%	214* (116) 62.6%	2560* (772) 13.9%	65733* (30847) 15.6%	115616* (30563) 33.1%	220316* (103209) 67.0%	401664 (100166) 36.5%
75	4737 (1121) 18.1%	...	...	4737 (1121) 18.1%	72686* (20721) 17.6%	...	...	72686* (20721) 17.2%
76	1391* (1076) 14.3%	87* (78) 70.8%	...	1478* (1089) 15.0%	23365* (16477) 13.1%	11669* (10488) 47.9%	...	35034* (20874) 17.3%
80	1148* (453) 40.5%	771* (193) 35.6%	1426 (216) 69.2%	3345 (535) 47.3%	46728* (15061) 46.0%	222370 (54042) 41.6%	2131861 (253946) 70.5%	2400960 (247403) 65.6%
ALL	79081 (2783) 17.7%	18990 (1007) 38.3%	6082 (340) 64.5%	104152 (2983) 20.6%	2373507 (98995) 21.5%	4043000 (188985) 41.4%	9210940 (348803) 73.9%	15627446 (402744) 47.0%

\*Standard error &gt;25% of the estimate. The estimate may be unreliable.

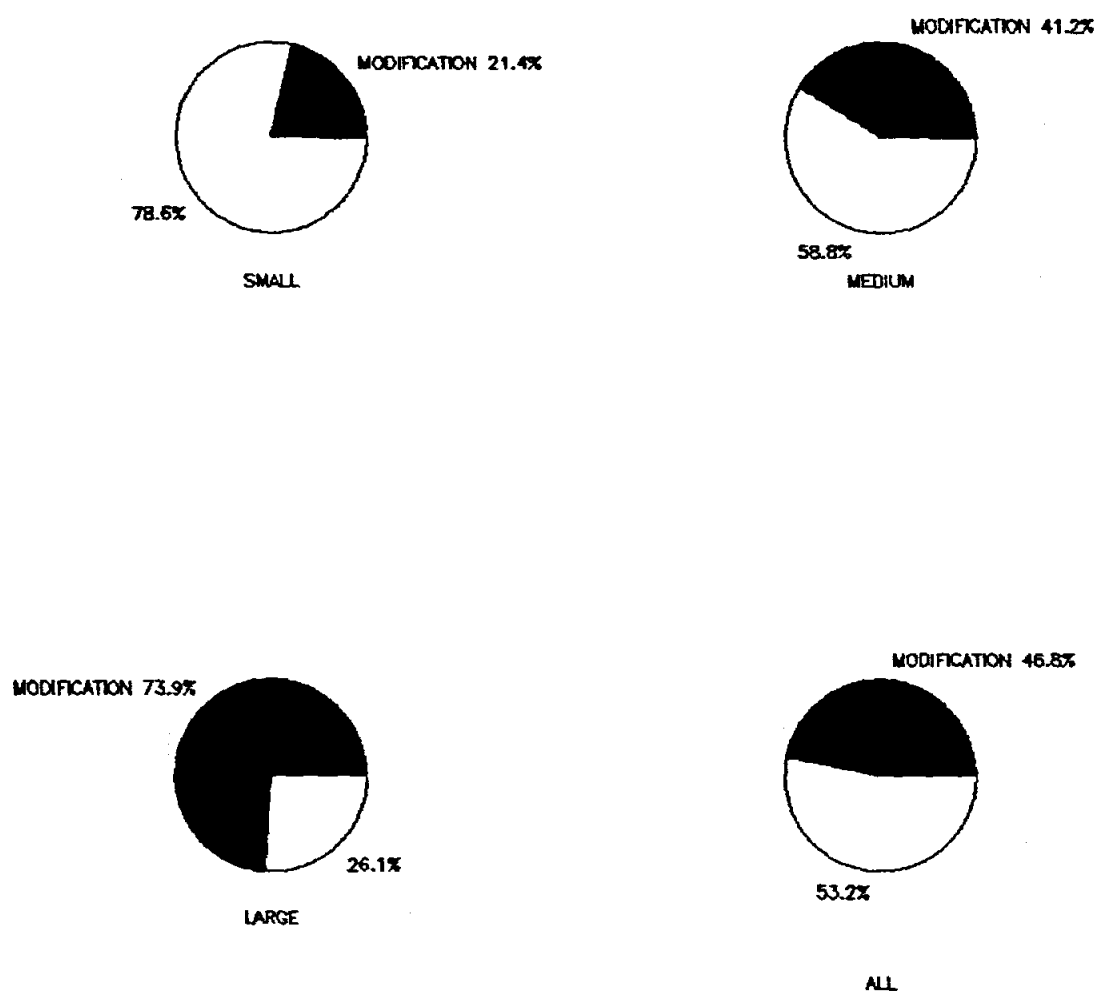
...No facilities observed.

**FIGURE IV - 59**  
**PLANTS WHICH MODIFIED EQUIPMENT OR PROCESSES**  
**(NOES 1981-1983)**

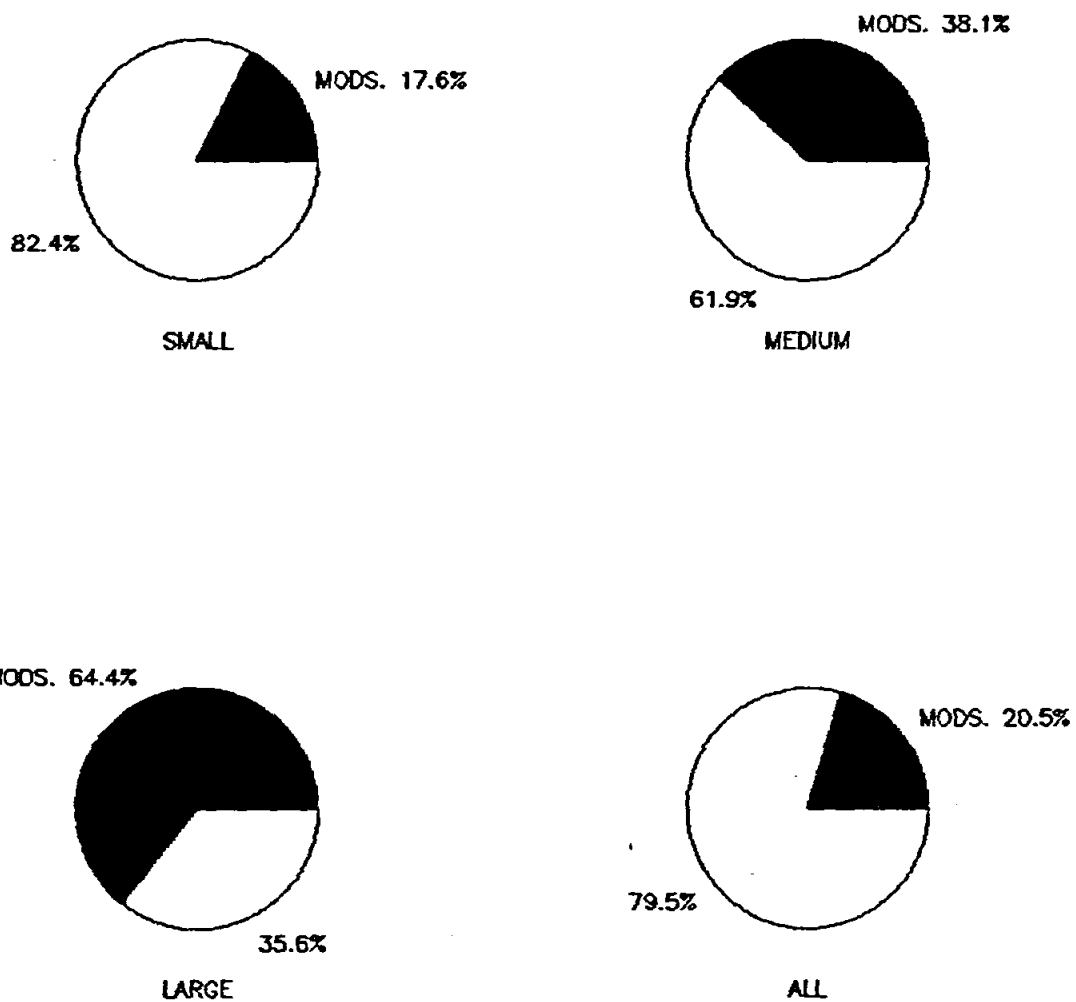




**FIGURE IV - 60**  
**WORKERS IN PLANTS WHICH MODIFIED**  
**EQUIPMENT OR PROCESSES**  
**(NOES 1981-1983)**



**FIGURE IV - 61**  
**PLANTS WHICH MODIFIED EQUIPMENT OR PROCESSES**  
**BY PLANT SIZE**  
**(NOES 1981-1983)**



**NOES QUESTIONNAIRE ITEM NO 42**  
**Equipment or Process Modifications Made to Reduce Worker Exposures**

**Intent**

The intent of this question was to determine if major equipment or process modifications (as specified for question 41) were made for the primary purpose of reducing or eliminating worker exposure to chemical, physical or biological agents.

This item was displayed on the questionnaire as:

42. Were any of these modifications made for the primary purpose of reducing employee exposures?

- 1    Yes  
2    No

**Notes**

Any modifications in equipment, plant layout, or process which was made primarily for economic reasons or for any reason not directly associated with protecting the health of the workers resulted in a negative response to this question.

**Analysis**

One analysis of the responses to this question is presented.

**Response 42.1 - Modification made to reduce worker exposure**

The estimates of the plants which made major equipment or process modifications during the past five years for the purpose of reducing occupational exposures, and workers in those plants (by number and proportion of the total) are displayed in Figures IV-62, IV-63, IV-64, IV-65, IV-66, and IV-67, and Tables IV-49 and IV-50.

Figure IV-62	Workers in plants which modified equipment or processes to reduce potential exposure (by major industrial group)
Figure IV-63	Workers in plants which modified equipment or processes to reduce potential exposure (by 2-digit SIC)
Figure IV-64	Plants which modified equipment or processes to reduce the exposure of workers (by major industrial group)
Figure IV-65	Plants which modified equipment or processes to reduce the exposure of workers (by 2-digit SIC)
Figure IV-66	Workers in plants which modified equipment or processes to reduce occupational exposure
Figure IV-67	Plants which modified equipment or processes to reduce occupational exposure.

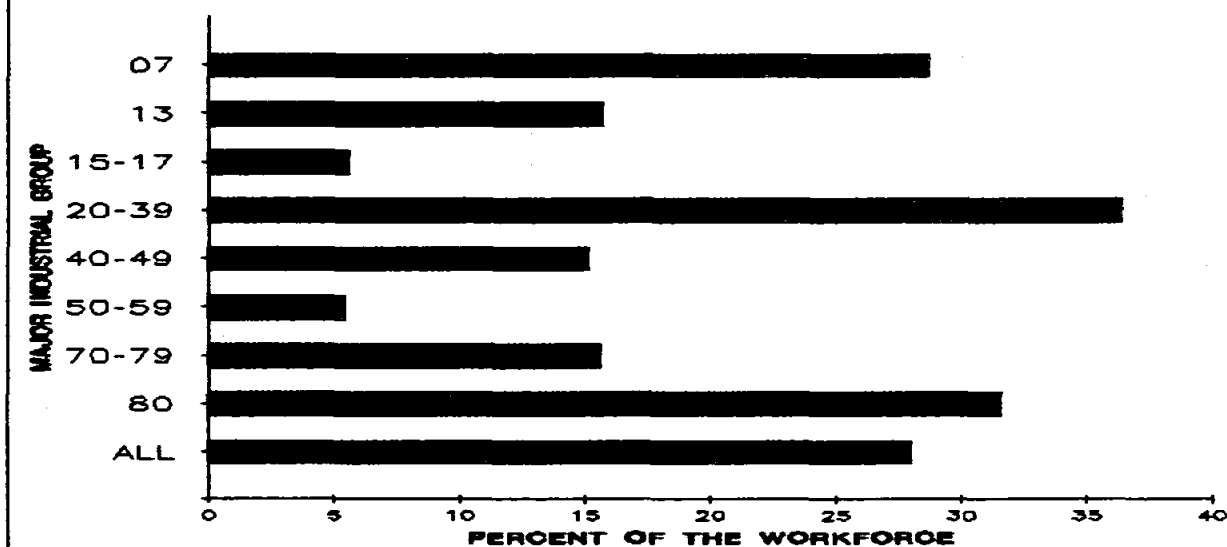
**Table IV-49**

**Number and percent of plants and employees in plants which have modified equipment or processes to reduce worker exposure (by major industrial group)**

**Table IV-50**

**Number and percent of plants and employees in plants which have modified equipment or processes to reduce worker exposure (by 2-digit SIC)**

**FIGURE IV - 62**  
**WORKERS IN PLANTS WHICH MODIFIED EQUIPMENT**  
**OR PROCESSES TO REDUCE POTENTIAL EXPOSURE**  
**(NOES 1981-1983)**



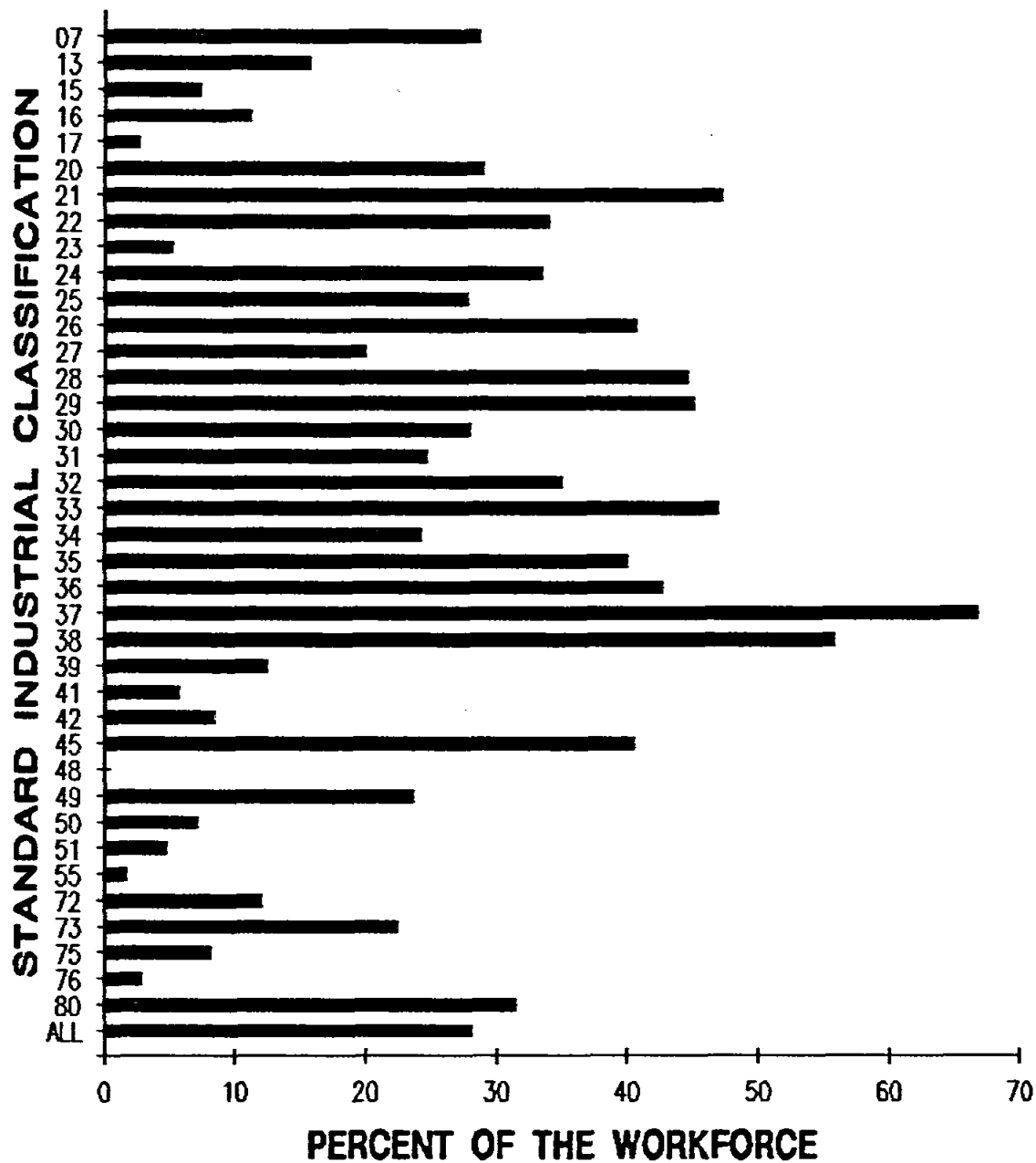
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-49

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 HAVE MODIFIED EQUIPMENT OR PROCESSES TO REDUCE WORKER EXPOSURE

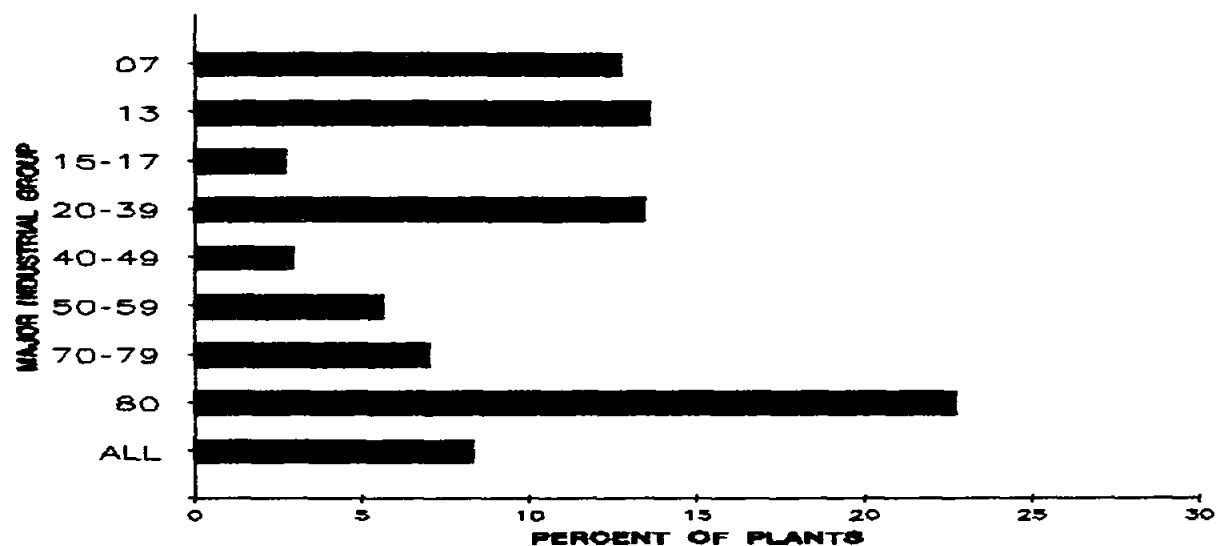
MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	720* (389) 12.9%	...	...	720* (389) 12.8%	31853* (18638) 30.7%	...	...	31853* (18638) 28.8%
13	1232* (648) 14.3%	90* (55) 8.8%	...	1322* (674) 13.7%	28485* (15917) 13.6%	36962* (22908) 21.2%	...	65446* (34180) 15.8%
15-17	2337* (742) 2.5%	464* (217) 11.2%	5* (5) 2.1%	2806* (704) 2.8%	64689* (19420) 3.1%	91685* (43742) 12.4%	20157* (21701) 8.5%	176531* (52740) 5.7%
20-39	15000 (1752) 9.8%	7801 (503) 24.6%	2948 (191) 47.0%	25748 (1807) 13.5%	556390 (64836) 12.1%	1737495 (123319) 27.2%	4740112 (323973) 57.3%	7033997 (340477) 36.5%
40-49	918* (499) 1.7%	703* (290) 12.0%	141* (48) 30.2%	1762* (639) 3.0%	35260* (16494) 2.5%	179190* (69992) 15.5%	265525* (100829) 46.3%	479975* (120499) 15.2%
50-59	3348* (1144) 5.7%	117* (87) 4.4%	...	3464* (1126) 5.7%	61882* (24519) 5.5%	21839* (14719) 5.3%	...	83721* (26067) 5.5%
70-79	4986 (1233) 6.8%	257* (112) 10.9%	165* (110) 46.5%	5407 (1245) 7.1%	103062* (33890) 7.4%	58195* (23266) 12.5%	184220* (98797) 54.3%	345477* (101714) 15.7%
80	722* (430) 25.4%	281* (127) 13.0%	608 (107) 29.5%	1611* (429) 22.8%	24404* (15293) 24.0%	80637* (34515) 15.1%	1056348 (120918) 34.9%	1161389 (110404) 31.7%
ALL	29262 (2730) 6.5%	9712 (651) 19.4%	3866 (249) 41.0%	42841 (2788) 8.4%	906026 (86239) 8.2%	2206003 (156505) 22.4%	6266362 (374136) 50.3%	9378390 (397437) 28.1%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE IV - 63**  
**WORKERS IN PLANTS WHICH MODIFIED EQUIPMENT**  
**OR PROCESSES TO REDUCE POTENTIAL EXPOSURE**  
**(NOES 1981-1983)**



**FIGURE IV - 64**  
**PLANTS WHICH MODIFIED EQUIPMENT OR PROCESSES**  
**TO REDUCE THE EXPOSURE OF WORKERS**  
**(NONS 1981-1983)**



NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
HAVE MODIFIED EQUIPMENT OR PROCESSES TO REDUCE WORKER EXPOSURE

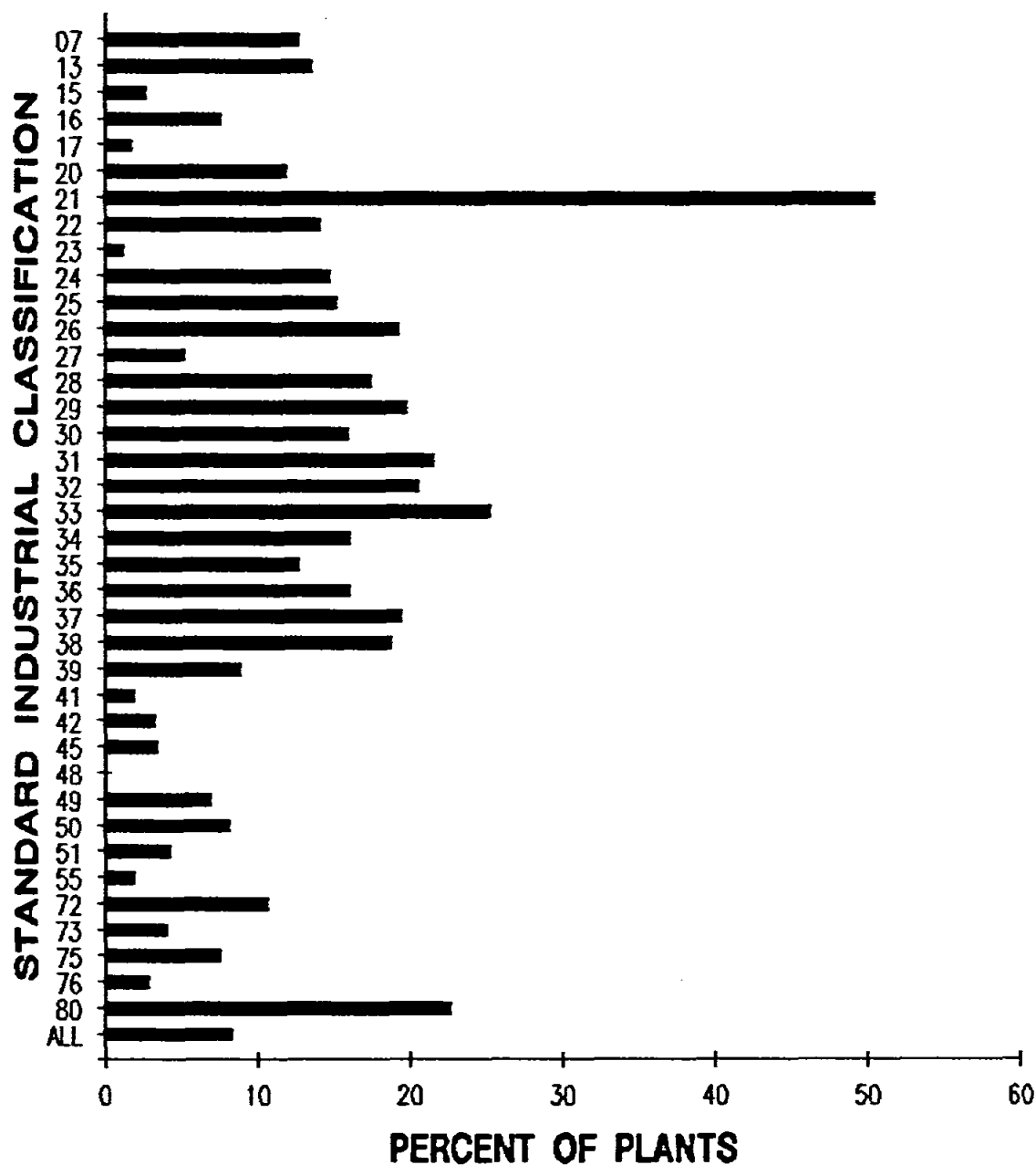
SIC CODE	PLANTS			TOTAL	EMPLOYEES			TOTAL
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)		SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	
07	720* (389) 12.9%	...	...	720* (389) 12.8%	31853* (18638) 30.7%	...	...	31853* (18638) 28.8%
13	1232* (648) 14.3%	90* (55) 8.8%	...	1322* (674) 13.7%	28485* (15917) 13.6%	36962* (22908) 21.2%	...	65446* (34180) 15.8%
15	673* (257) 2.7%	56* (57) 5.0%	5* (5) 3.7%	733* (262) 2.8%	24092* (9445) 4.3%	21769* (22236) 11.0%	20157* (21701) 15.0%	66018* (32172) 7.4%
16	657* (332) 5.8%	303* (158) 27.1%	...	960* (362) 7.7%	14752* (7043) 5.2%	52175* (28075) 25.1%	...	66926* (30774) 11.3%
17	1007* (588) 1.7%	105* (95) 5.5%	...	1113* (530) 1.9%	25845* (13427) 2.1%	17742* (15978) 5.4%	...	43587* (13962) 2.8%
20	907* (306) 7.9%	674* (178) 21.0%	242* (69) 43.2%	1823* (327) 12.0%	37358* (18690) 9.6%	167488* (36878) 24.9%	247676* (77960) 50.4%	452523* (83246) 29.1%
21	26* (42) 86.5%	...	29* (49) 37.0%	55* (62) 50.6%	1608* (2605) 86.2%	...	52420* (43762) 46.7%	54028* (43288) 47.4%
22	178* (163) 6.1%	348* (108) 21.9%	160* (64) 53.4%	685* (192) 14.2%	6811* (6217) 6.4%	82280* (28962) 23.7%	154794* (78929) 59.3%	243886* (83154) 34.1%
23	112* (97) .9%	42* (42) 1.3%	47* (41) 19.4%	200* (114) 1.3%	5643* (4885) 1.3%	13492* (14038) 2.2%	47062* (40984) 22.6%	66197* (40913) 5.3%
24	1307* (595) 12.2%	368* (160) 32.1%	104* (74) 100.0%	1779* (652) 14.9%	43068* (21930) 14.2%	59510* (24701) 32.4%	92355* (52501) 100.0%	194932* (71011) 33.6%
25	493* (218) 11.8%	291* (139) 27.4%	32* (25) 26.7%	816* (213) 15.3%	17699* (9962) 12.7%	78070* (37125) 30.4%	48937* (30396) 39.8%	144706* (39878) 27.9%
26	677* (212) 16.5%	334* (149) 21.3%	130* (80) 60.9%	1142* (298) 19.4%	37290* (13448) 27.1%	83311* (42494) 29.6%	134517* (71280) 65.0%	255118* (92655) 40.8%
27	663* (429) 3.7%	280* (142) 14.9%	135* (72) 42.9%	1078* (446) 5.3%	30163* (18114) 6.3%	60215* (32268) 16.7%	147529* (52602) 42.7%	237907* (62984) 20.1%
28	645* (230) 10.4%	470* (107) 40.6%	244* (65) 64.2%	1359* (252) 17.6%	29494* (10713) 16.3%	100834* (25306) 38.7%	279622* (73619) 58.7%	409950* (79761) 44.7%
29	190* (132) 18.8%	35* (27) 11.8%	56* (41) 55.0%	280* (140) 19.9%	6930* (4851) 16.9%	11069* (8773) 17.5%	82191* (72187) 69.9%	100191* (71607) 45.2%
30	1014* (393) 15.1%	261* (114) 17.0%	91* (38) 40.5%	1366* (400) 16.1%	41582* (16715) 18.5%	56377* (32698) 19.1%	113473* (45217) 48.6%	211431* (50127) 28.1%
31	223* (195) 24.0%	86* (63) 15.1%	22* (20) 87.3%	331* (212) 21.7%	5587* (4876) 22.5%	26350* (19103) 19.5%	11650* (10428) 74.4%	43587* (23928) 24.8%
32	1507* (604) 17.1%	473* (142) 46.7%	86* (56) 46.9%	2066* (611) 20.7%	54306* (17303) 22.9%	91494* (29508) 43.8%	56098* (36137) 43.5%	201898* (47685) 35.1%
3	904* (277) 21.9%	524* (165) 35.7%	80* (23) 23.7%	1508* (383) 25.4%	43413* (12760) 31.4%	131727* (38411) 42.3%	329207* (74114) 53.0%	504346* (94590) 47.1%



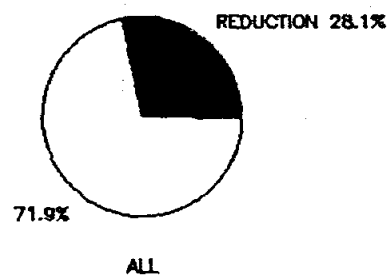
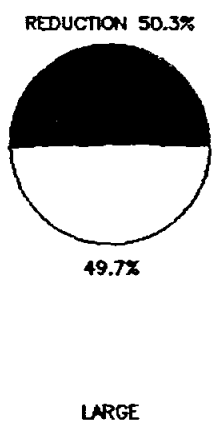
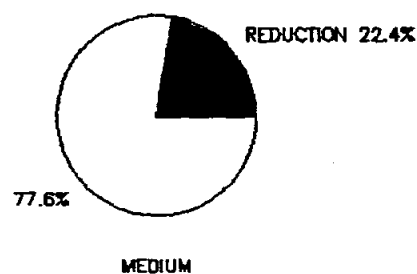
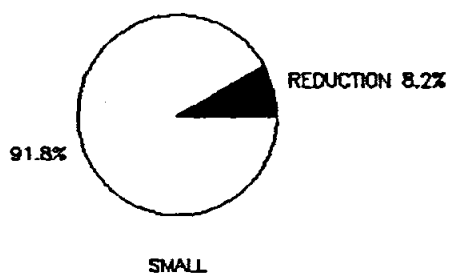
SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	2562* (783) 13.8%	938 (184) 30.0%	67* (36) 19.3%	3566 (768) 16.2%	70131 (16114) 12.6%	195197 (39525) 32.7%	100655* (51162) 28.7%	365983 (67064) 24.4%
35	2040* (644) 9.0%	1031 (178) 30.3%	353 (55) 45.1%	3425 (678) 12.8%	62212* (17208) 10.3%	233528 (43030) 35.3%	661442 (104149) 59.4%	957182 (109201) 40.2%
36	693* (270) 9.7%	601 (138) 22.4%	420* (123) 53.3%	1713 (369) 16.2%	28282* (10962) 12.3%	124612 (25790) 22.5%	688770 (166991) 58.2%	841664 (166067) 42.8%
37	126* (156) 3.2%	635* (167) 53.4%	333 (79) 80.0%	1094 (263) 19.6%	8469* (9604) 6.7%	135811* (35007) 56.8%	1112840 (189195) 73.5%	1257120 (183146) 66.9%
38	266* (243) 9.9%	196* (85) 20.4%	307* (98) 73.9%	770* (271) 18.9%	12137* (7207) 11.6%	40052* (20341) 20.6%	372873* (105182) 81.0%	425063* (109022) 56.0%
39	468* (306) 7.1%	215* (561) 26.9%	10* (16) 3.0%	693* (571) 9.0%	14206* (7982) 8.6%	46079* (131615) 30.8%	6000* (9493) 2.9%	66285* (132072) 12.6%
41	...	97* (83) 19.0%	...	97* (83) 2.0%	...	11518* (9829) 14.1%	...	11518* (9829) 5.8%
42	564* (462) 2.8%	137* (88) 9.2%	35* (27) 42.2%	735* (471) 3.4%	13167* (8543) 2.7%	29060* (17136) 11.2%	28451* (21784) 38.0%	70679* (18370) 8.6%
45	...	75* (75) 12.8%	66* (32) 44.7%	141* (90) 3.5%	...	7769* (7769) 7.1%	175728* (85097) 66.5%	183497* (85462) 40.7%
48	...	...	...	...	...	...	...	...
49	316* (226) 3.8%	368* (181) 19.8%	41* (25) 23.6%	724* (309) 7.1%	20158* (14534) 7.5%	119063* (54734) 28.0%	61346* (34258) 41.9%	200568* (77353) 23.8%
50	2543* (943) 8.4%	117* (87) 6.5%	...	2659* (917) 8.3%	43706* (18507) 6.9%	21839* (14719) 7.7%	...	65545* (20210) 7.2%
51	409* (305) 4.5%	...	...	409* (305) 4.4%	10358* (7025) 5.6%	...	...	10358* (7025) 4.9%
55	396* (368) 2.1%	...	...	396* (368) 2.0%	7818* (8064) 2.5%	...	...	7818* (8064) 1.9%
72	2175 (425) 10.5%	123* (90) 18.2%	...	2298 (436) 10.8%	39084* (13986) 10.3%	18452* (14645) 22.4%	...	57536* (20170) 12.2%
73	484* (323) 2.9%	134* (70) 9.0%	165* (110) 48.3%	782* (338) 4.2%	23627* (20183) 5.6%	39743* (18791) 11.4%	184220* (98797) 56.0%	247591* (101144) 22.5%
75	2027* (919) 7.7%	...	...	2027* (919) 7.7%	34356* (15750) 8.3%	...	...	34356* (15750) 8.2%
76	299* (415) 3.1%	...	...	299* (415) 3.0%	5994* (7820) 3.4%	...	...	5994* (7820) 3.0%
80	722* (430) 25.4%	281* (127) 13.0%	608 (107) 29.5%	1611* (429) 22.8%	24404* (15293) 24.0%	80637* (34515) 15.1%	1056348 (120918) 34.9%	1161389 (110404) 31.7%
ALL	29224 (2719) 6.5%	9686 (647) 19.5%	3866 (237) 41.0%	42776 (2806) 8.5%	904091 (93762) 8.2%	2194224 (148181) 22.5%	6266362 (320618) 50.3%	9364677 (341237) 28.2%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

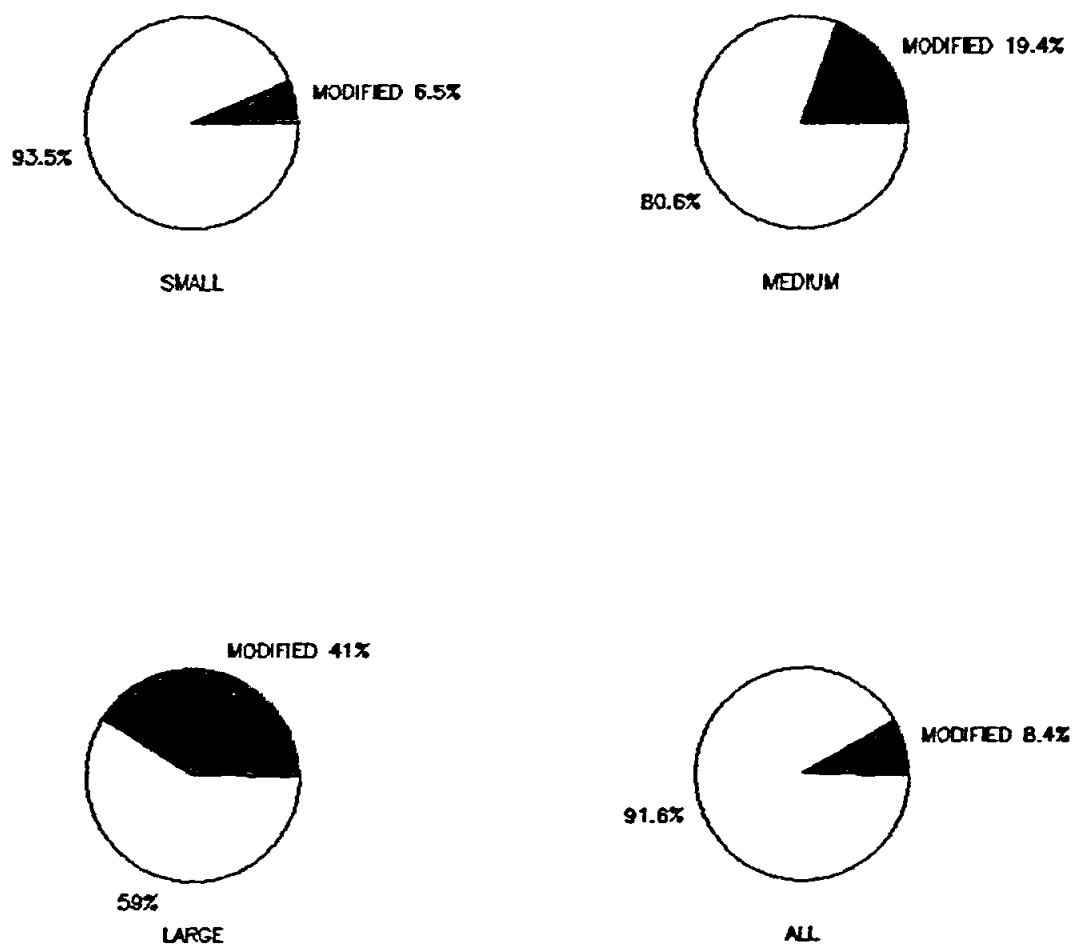
**FIGURE IV - 65**  
**PLANTS WHICH MODIFIED EQUIPMENT OR PROCESSES**  
**TO REDUCE THE EXPOSURE OF WORKERS**  
**(NOES 1981-1983)**



**FIGURE IV - 66**  
**WORKERS IN PLANTS WHICH MODIFIED EQUIPMENT**  
**OR PROCESSES TO REDUCE OCCUPATIONAL EXPOSURE**  
**(NOES 1981-1983)**



**FIGURE IV - 67**  
**PLANTS WHICH MODIFIED EQUIPMENT OR PROCESSES**  
**TO REDUCE OCCUPATIONAL EXPOSURE**  
**(NOES 1981-1983)**



NOES QUESTIONNAIRE ITEM NO. 43

Equipment or Process Modifications Made as a Result of Government Inspection

Intent

The intent of this question was to determine if the equipment or process modifications made by the facility in the past five years were the direct result of government inspection activity.

This item was displayed on the questionnaire as:

43. Were any of these modifications made as a result of inspections of this facility by federal, state or local authorities?

- 1 Yes  
2 No

Notes

An affirmative answer to this question was recorded only when modifications were made as a consequence of a regulatory visit.

Modifications resulting from non-regulatory consultations by private consultants, corporate staff, insurance carrier specialists, or government employees were excluded.

Analysis

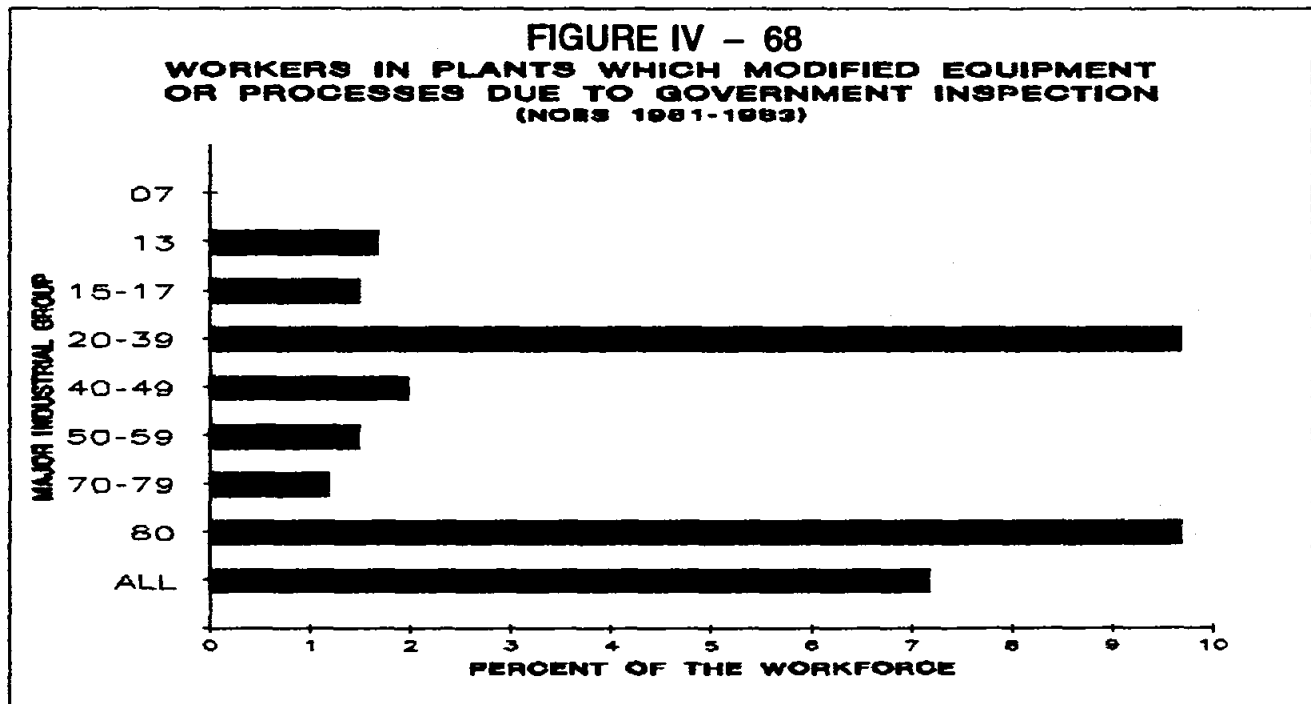
One analysis of the responses to question 43 is presented.

Response 43.1 - Modifications made as a result of government inspection

The estimates of the plants which modified equipment or processes as a result of a government inspection, and workers in those plants (by number and proportion of the total) are displayed in Figures IV-68, IV-69, IV-70, IV-71, IV-72, and IV-73, and Tables IV-51 and IV-52.

Figure IV-68	Workers in plants which modified equipment or processes due to government inspection (by major industrial group)
Figure IV-69	Workers in plants which modified equipment or processes due to government inspection (by 2-digit SIC)
Figure IV-70	Plants which modified equipment or processes as a result of government inspection (by major industrial group)
Figure IV-71	Plants which modified equipment or processes as a result of government inspection (by 2-digit SIC)
Figure IV-72	Workers in plants which modified equipment or processes after government inspection
Figure IV-73	Plants which modified equipment or processes after government inspection

<b>Table IV-51</b>	<b>Number and percent of plants and employees in plants which modified equipment or processes due to government inspection (by major industrial group)</b>
<b>Table IV-52</b>	<b>Number and percent of plants and employees in plants which modified equipment or processes due to government inspection (by 2-digit SIC)</b>



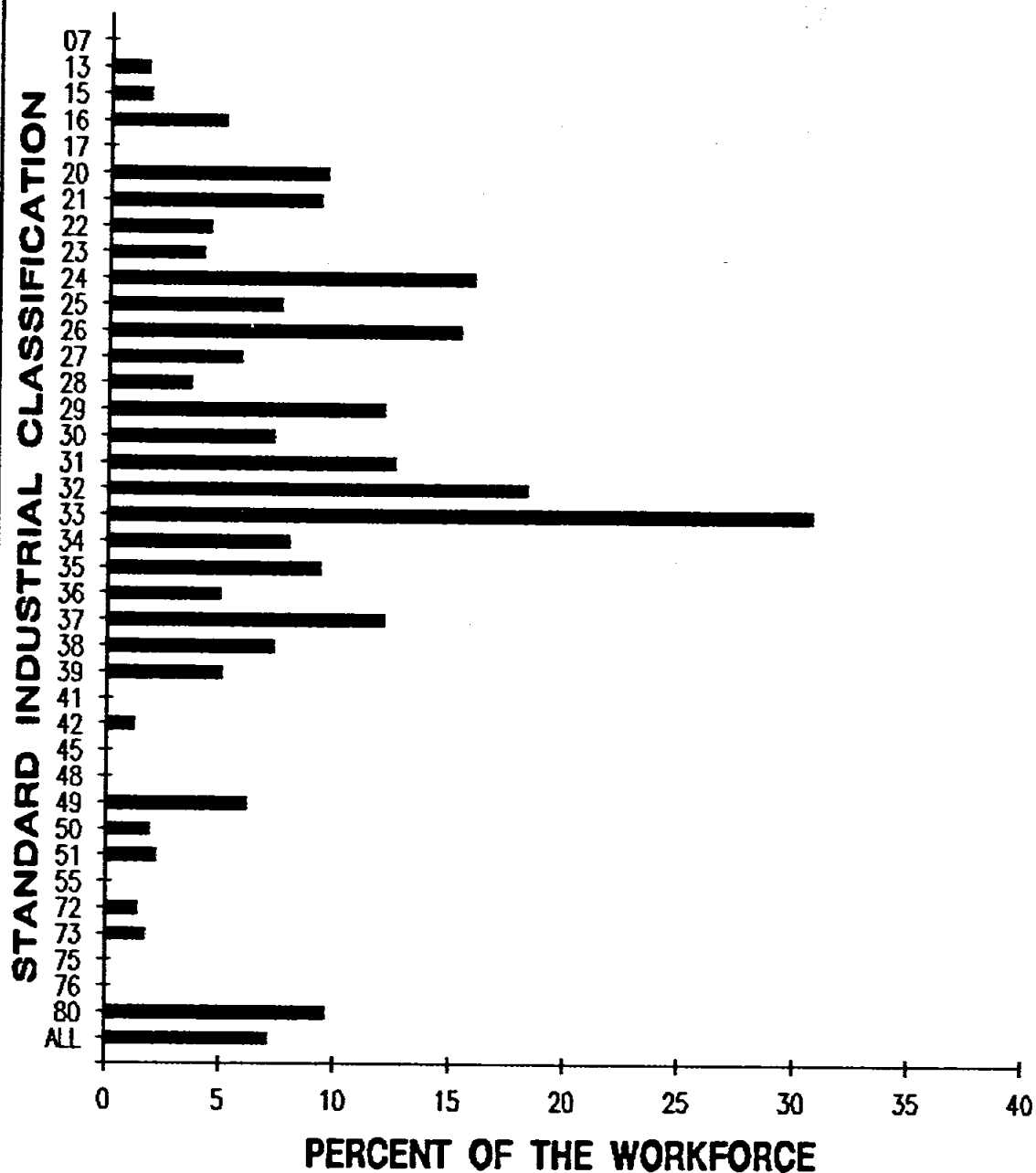
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-51

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 MODIFIED EQUIPMENT OR PROCESSES DUE TO GOVERNMENT INSPECTION

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	...	...	...	...	...	...	...	...
13	116* (156) 1.4%	...	...	116* (156) 1.2%	6973* (9359) 3.3%	...	...	6973* (9359) 1.7%
15-17	562* (266) .6%	160* (143) 3.9%	...	722* (272) .7%	21519* (9869) 1.0%	25225* (22742) 3.4%	...	46744* (22999) 1.5%
20-39	6259 (946) 4.1%	2388 (401) 7.5%	834 (137) 13.3%	9481 (1061) 5.0%	227541 (31640) 4.9%	525206 (78900) 8.2%	1119361 (111516) 13.5%	1872107 (152456) 9.7%
40-49	213* (157) .4%	15* (15) .3%	21* (16) 4.5%	249* (159) .4%	17186* (12239) 1.2%	4581* (4581) .4%	41485* (31333) 7.2%	63252* (35655) 2.0%
50-59	1072* (612) 1.8%	...	...	1072* (612) 1.8%	23012* (13653) 2.0%	...	...	23012* (13653) 1.5%
70-79	602* (419) .8%	57* (59) 2.4%	...	660* (420) .9%	16360* (12165) 1.2%	10404* (10710) 2.2%	...	26764* (15278) 1.2%
80	228* (234) 8.0%	146* (97) 6.8%	195* (72) 9.4%	569* (256) 8.0%	10924* (11242) 10.7%	38646* (25278) 7.2%	306924* (107843) 10.2%	356494* (103158) 9.7%
ALL	9052 (1272) 2.0%	2767 (441) 5.5%	1050 (156) 11.1%	12870 (1366) 2.5%	323514 (42387) 2.9%	604061 (86701) 6.1%	1467770 (158265) 11.8%	2395345 (190242) 7.2%

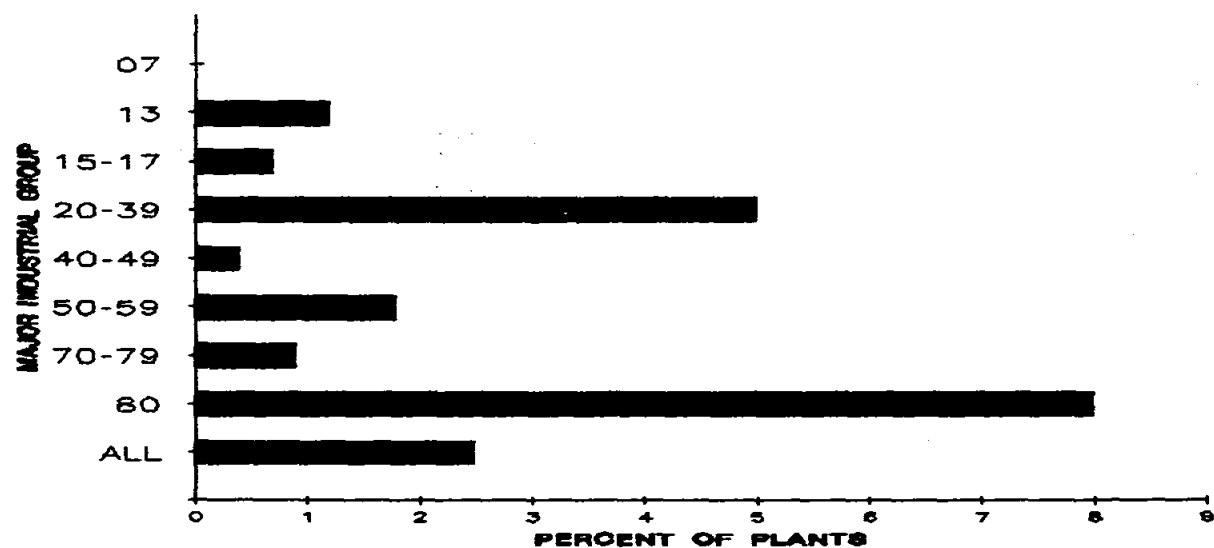
\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE IV - 69**  
**WORKERS IN PLANTS WHICH MODIFIED EQUIPMENT**  
**OR PROCESSES DUE TO GOVERNMENT INSPECTION**  
**(NOES 1981-1983)**





**FIGURE IV - 70**  
**PLANTS WHICH MODIFIED EQUIPMENT OR PROCESSES**  
**AS A RESULT OF GOVERNMENT INSPECTION**  
**(NOES 1981-1982)**



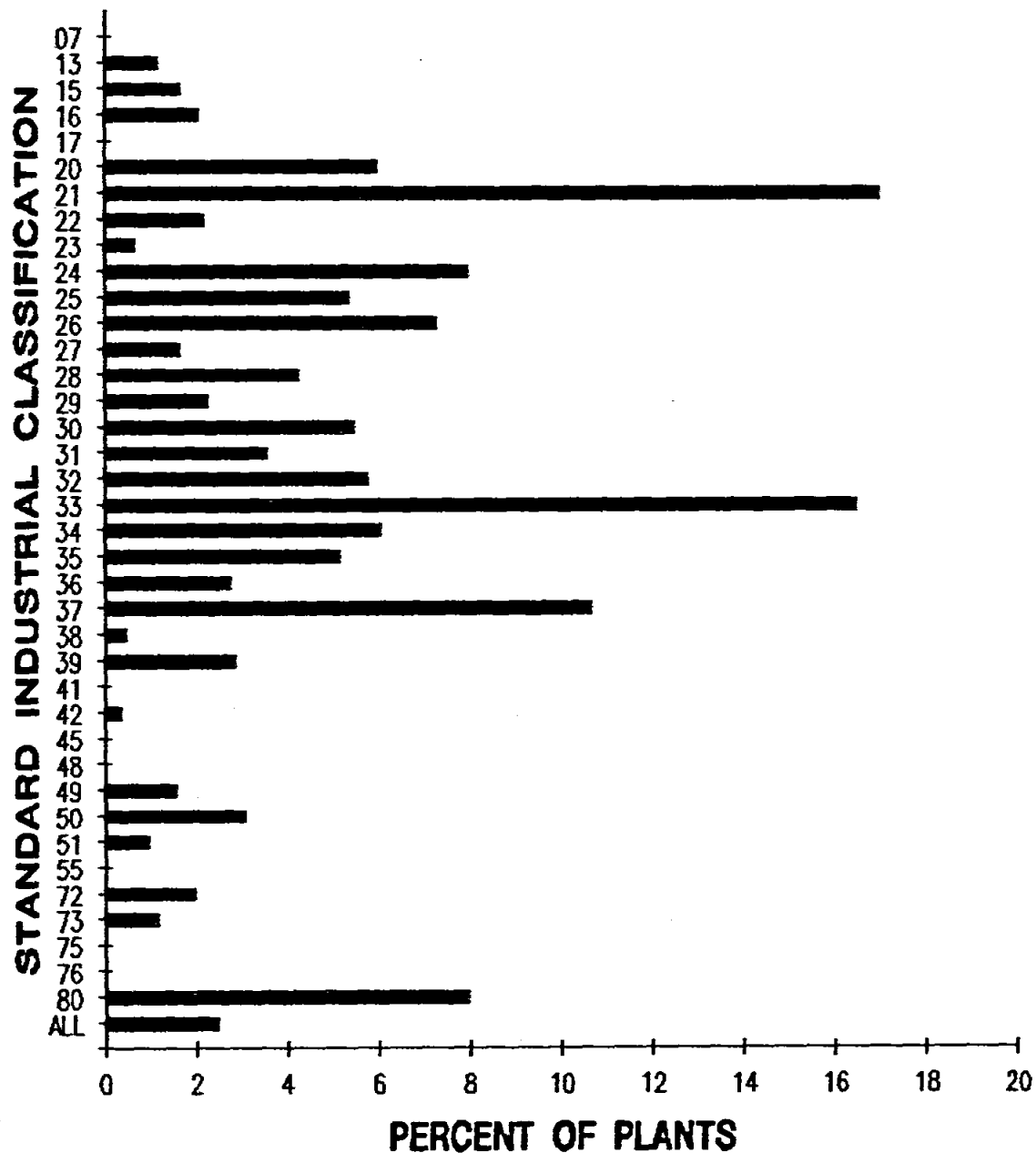
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
MODIFIED EQUIPMENT OR PROCESSES DUE TO GOVERNMENT INSPECTION

SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	...	...	...	...	...	...	...	...
13	116* (156) 1.4%	...	...	116* (156) 1.2%	6973* (9359) 3.3%	...	...	6973* (9359) 1.7%
15	446* (257) 1.8%	...	...	446* (257) 1.7%	15922* (8972) 2.8%	...	...	15922* (8972) 1.8%
16	108* (99) 1.0%	160* (143) 14.3%	...	268* (155) 2.1%	5040* (4289) 1.8%	25225* (22742) 12.1%	...	30265* (21860) 5.1%
17	8* (10) .0%	...	...	8* (10) .0%	557* (729) .0%	...	...	557* (729) .0%
20	471* (272) 4.1%	381* (141) 11.8%	54* (42) 9.6%	905* (320) 6.0%	15269* (8443) 3.9%	100323* (39229) 14.9%	33563* (26033) 6.8%	149155* (54645) 9.6%
21	...	...	19* (45) 23.5%	19* (45) 17.0%	...	...	10657* (26041) 9.5%	10657* (26041) 9.3%
22	...	97* (63) 6.1%	12* (11) 3.9%	108* (64) 2.2%	...	21892* (12906) 6.3%	10490* (9909) 4.0%	32383* (16981) 4.5%
23	67* (82) .5%	...	47* (41) 19.4%	114* (87) .7%	5630* (6860) 1.3%	...	47062* (40984) 22.6%	52692* (40809) 4.2%
24	794* (452) 7.4%	143* (95) 12.4%	19* (8) 18.1%	955* (459) 8.0%	30614* (18221) 10.1%	26431* (16287) 14.4%	35767* (18789) 38.7%	92813* (30903) 16.0%
25	203* (131) 4.9%	69* (69) 6.5%	17* (16) 14.7%	289* (150) 5.4%	10212* (6955) 7.3%	14009* (14474) 5.5%	15306* (14277) 12.4%	39527* (20490) 7.6%
26	254* (131) 6.2%	74* (63) 4.7%	100* (46) 46.7%	428* (161) 7.3%	11856* (7054) 8.6%	10687* (9058) 3.8%	73893* (41479) 35.7%	96436* (42474) 15.4%
27	279* (227) 1.5%	28* (29) 1.5%	41* (41) 12.8%	348* (226) 1.7%	11058* (7851) 2.3%	3853* (3959) 1.1%	54795* (46537) 15.8%	69706* (45597) 5.9%
28	220* (135) 3.6%	103* (85) 8.9%	11* (22) 2.8%	334* (162) 4.3%	5221* (3303) 2.9%	20585* (19186) 7.9%	8161* (17132) 1.7%	33967* (25159) 3.7%
29	...	...	32* (31) 31.7%	32* (31) 2.3%	...	...	26926* (26106) 22.9%	26926* (26106) 12.1%
30	410* (281) 6.1%	...	55* (36) 24.6%	465* (297) 5.5%	11877* (8186) 5.3%	...	43346* (27144) 18.6%	55223* (31883) 7.3%
31	...	32* (38) 5.7%	22* (20) 87.3%	54* (44) 3.6%	...	10482* (12234) 7.7%	11650* (10428) 74.4%	22131* (16757) 12.6%
32	273* (247) 3.1%	272* (121) 26.8%	37* (28) 20.0%	582* (271) 5.8%	13595* (11891) 5.7%	63330* (32504) 30.3%	28732* (21763) 22.3%	105657* (38213) 18.4%
33	583* (268) 14.1%	342* (150) 23.3%	54* (26) 16.1%	980* (307) 16.5%	27310* (9365) 19.7%	90658* (37653) 29.1%	212433* (73715) 34.2%	330402* (83994) 30.8%

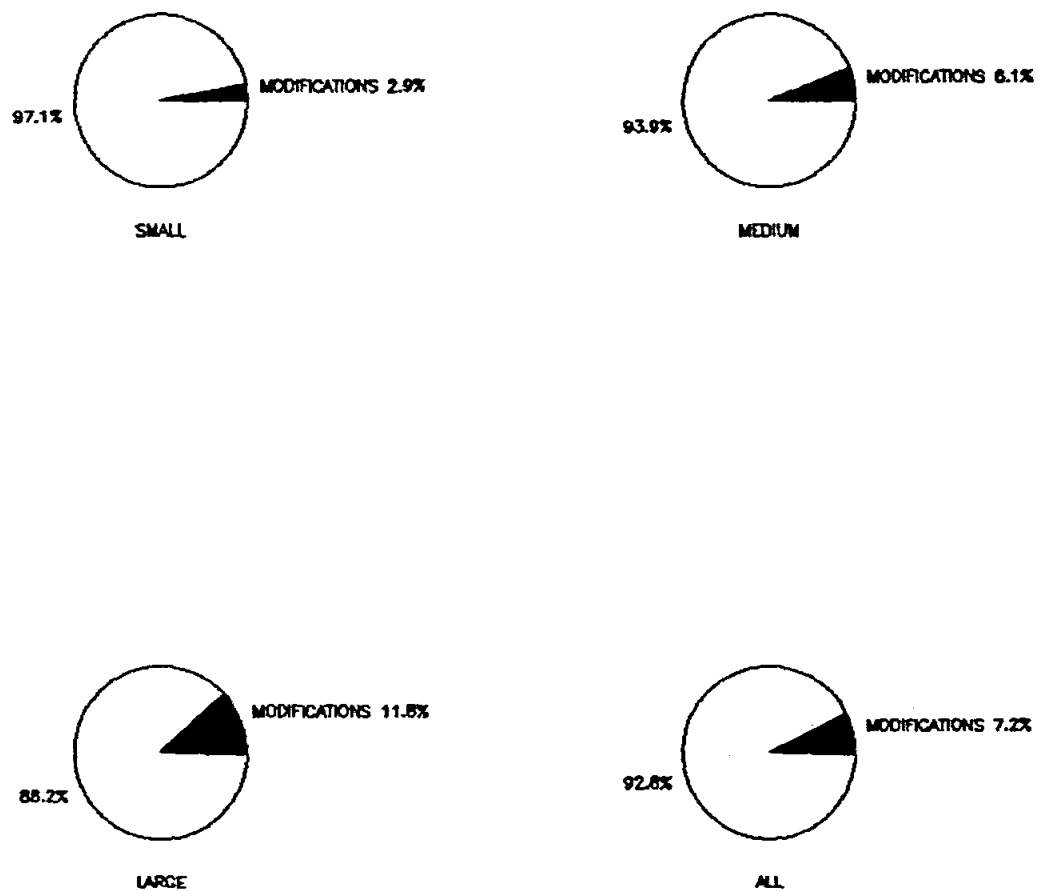
SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	1004* (618) 5.4%	284* (109) 9.1%	44* (29) 12.7%	1332* (594) 6.1%	22108* (9783) 4.0%	69044* (28680) 11.6%	28616* (18331) 8.2%	119768* (41824) 8.0%
35	1194* (550) 5.3%	81* (49) 2.4%	120* (47) 15.3%	1395* (556) 5.2%	30709* (11093) 5.1%	12362* (6365) 1.9%	181127 (34185) 16.3%	224198 (33236) 9.4%
36	99* (72) 1.4%	187* (98) 7.0%	14* (11) 1.8%	299* (119) 2.8%	8365* (6106) 3.6%	35530* (17191) 6.4%	54659* (51311) 4.6%	98554* (55842) 5.0%
37	312* (289) 7.8%	180* (92) 15.1%	105* (56) 25.3%	597* (321) 10.7%	21170* (19213) 16.7%	27905* (15365) 11.7%	180193* (58053) 11.9%	229267* (69483) 12.2%
38	...	...	22* (28) 5.3%	22* (28) .5%	...	...	55983* (51347) 12.2%	55983* (51347) 7.4%
39	98* (105) 1.5%	116* (285) 14.6%	10* (16) 3.0%	224* (294) 2.9%	2548* (2720) 1.5%	18116* (41740) 12.1%	6000* (9493) 2.9%	26664* (45439) 5.1%
41	...	...	...	...	...	...	...	...
42	67* (68) .3%	15* (15) 1.0%	...	83* (69) .4%	6405* (6442) 1.3%	4581* (4581) 1.8%	...	10985* (7684) 1.3%
45	...	...	...	...	...	...	...	...
48	...	...	...	...	...	...	...	...
49	146* (146) 1.8%	...	21* (16) 12.1%	167* (146) 1.6%	10781* (10796) 4.0%	...	41485* (31333) 28.3%	52266* (32737) 6.2%
50	983* (588) 3.2%	...	...	983* (588) 3.1%	18090* (11884) 2.9%	...	...	18090* (11884) 2.0%
51	90* (110) 1.0%	...	...	90* (110) 1.0%	4923* (6034) 2.7%	...	...	4923* (6034) 2.3%
55	...	...	...	...	...	...	...	...
72	433* (379) 2.1%	...	...	433* (379) 2.0%	7257* (6780) 1.9%	...	...	7257* (6780) 1.5%
73	169* (191) 1.0%	57* (59) 3.8%	...	226* (194) 1.2%	9103* (10303) 2.2%	10404* (10710) 3.0%	...	19507* (14132) 1.8%
75	...	...	...	...	...	...	...	...
76	...	...	...	...	...	...	...	...
80	228* (234) 8.0%	146* (97) 6.8%	195* (72) 9.4%	569* (256) 8.0%	10924* (11242) 10.7%	38646* (25278) 7.2%	306924* (107843) 10.2%	356494* (103158) 9.7%
ALL	9052 (1192) 2.0%	2767 (355) 5.6%	1050 (166) 11.1%	12870 (1264) 2.5%	323514 (43004) 2.9%	604061 (65774) 6.2%	1467770 (164101) 11.8%	2395345 (183715) 7.2%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

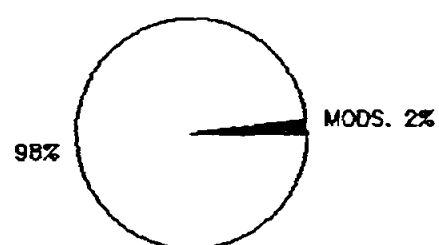
**FIGURE IV - 71**  
**PLANTS WHICH MODIFIED EQUIPMENT OR PROCESSES**  
**AS A RESULT OF GOVERNMENT INSPECTION**  
**(NOES 1981-1983)**



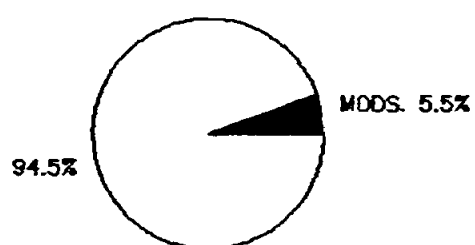
**FIGURE IV - 72**  
**WORKERS IN PLANTS WHICH MODIFIED EQUIPMENT**  
**OR PROCESSES AFTER GOVERNMENT INSPECTION**  
**(NOES 1981-1983)**



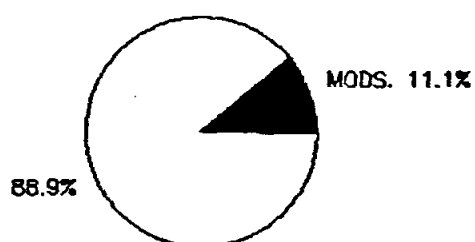
**FIGURE IV - 73**  
**PLANTS WHICH MODIFIED EQUIPMENT OR PROCESSES**  
**AFTER A GOVERNMENT INSPECTION**  
**(NOES 1981-1983)**



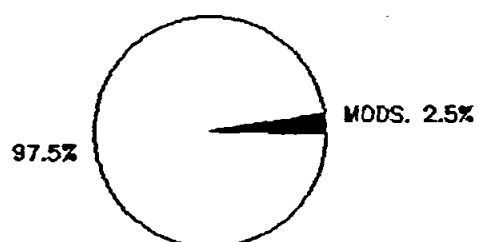
SMALL



MEDIUM



LARGE



ALL

NOES QUESTIONNAIRE ITEM NO. 44  
Type of Equipment or Process Modification

Intent

The intent of this question was to categorize process or equipment modifications made in the past five years.

This item was displayed on the questionnaire as:

44. What was the nature of the modification?

- 1    A redesign of the process
- 2    Enclosing the process
- 3    Equipment substitution
- 4    A redesign of the equipment
- 5    Combination of the above
- 6    Not listed here

Notes

This question was asked only of those respondents who gave a positive response when asked if major modifications of equipment or processes had been made during the previous five years. The criteria for "major modification" detailed in the notes for question 41 therefore apply to the modifications specified in this question.

Any combination of modifications 1 through 4 was coded "5" or "combination of the above".

Analysis

Two analyses of the responses to question 44 are presented.

- (1) Response 44, sub-items 1 to 6 - Types of modifications made in the past five years

The estimated proportions of plants and workers in those plants which have made major modifications to equipment or processes are displayed in Figure IV-74.

Figure IV-74            Equipment or process modification by plants and workers in plants

- (2) Response 44, sub-items 1 to 6 - Estimated plants and workers by category of equipment or process modification

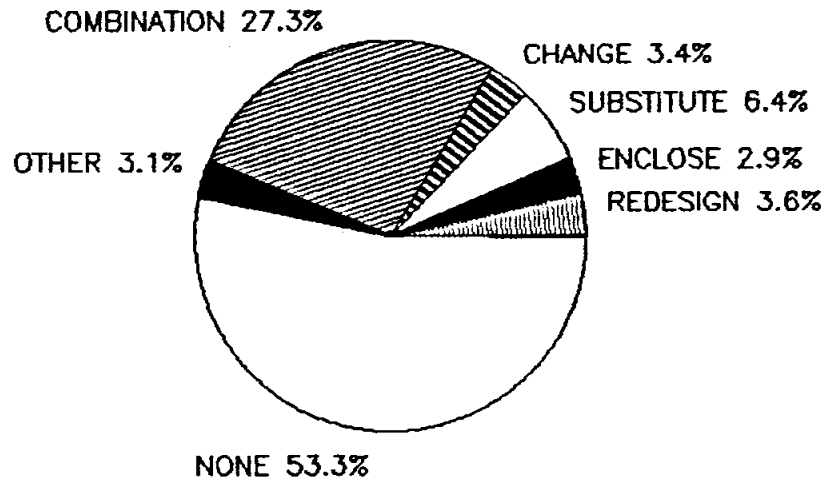
The estimates of the plants which have made specific equipment or process modifications in the last five years, and workers in those plants (by number and proportion of the total) are displayed in Table IV-53, IV-54, IV-55, and IV-56.

Table IV-53            Number and percent of plants which modified equipment or processes in the past five years by type of modification (by major industrial group)

<b>Table IV-54</b>	<b>Number and percent of plants which modified equipment or processes in the past five years by type of modification (by 2-digit SIC)</b>
<b>Table IV-55</b>	<b>Number and percent of workers in plants which modified equipment or processes in the past five years by type of modification (by major industrial group)</b>
<b>Table IV-56</b>	<b>Number and percent of workers in plants which modified equipment or processes in the past five years by type of modification (by 2-digit SIC)</b>

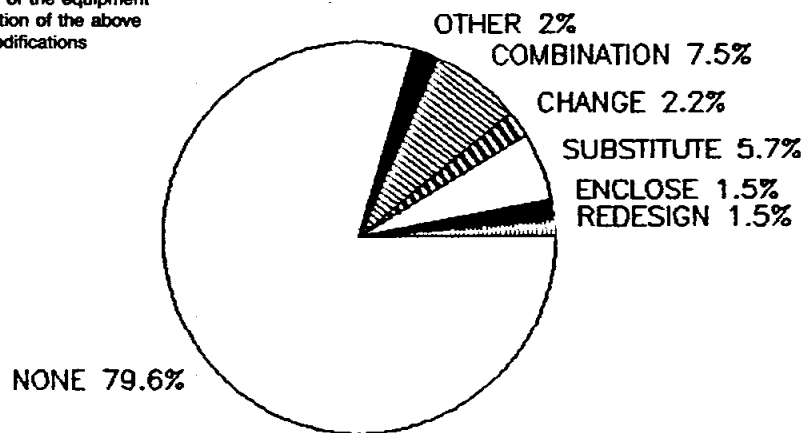


**FIGURE IV – 74**  
**EQUIPMENT OR PROCESS MODIFICATIONS**  
**BY PLANTS AND WORKERS IN PLANTS**  
**(NOES 1981-1983)**



**WORKERS**

- LEGEND**
- a redesign of the process
  - enclosing the process
  - equipment substitution
  - redesign of the equipment
  - combination of the above
  - other modifications
- REDESIGN  
ENCLOSE  
SUBSTITUTE  
CHANGE  
COMBINATION  
OTHER



**PLANTS**

NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-53

NUMBER AND PERCENT OF PLANTS WHICH MODIFIED EQUIPMENT  
OR PROCESSES IN THE PAST FIVE YEARS BY TYPE OF MODIFICATION

MAJOR GROUP	REDESIGN PROCESS	ENCLOSING PROCESS	EQUIPMENT SUBSTITUTION	EQUIPMENT REDESIGN	COMBINATION OF REDESIGN/SUBSTITUTION	OTHER METHODS
07	162* (162) 2.9%	...	407* (289) 7.2%	151* (191) 2.7%	...	...
13	...	493* (553) 5.1%	48* (57) .5%	2* (2) .0%	1200* (524) 12.4%	...
15-17	409* (213) .4%	239* (171) .2%	2899* (845) 2.9%	977* (487) 1.0%	1239* (407) 1.3%	1565* (590) 1.6%
20-39	3965 (801) 2.1%	4712 (947) 2.5%	12208 (1168) 6.4%	5881 (861) 3.1%	24182 (1693) 12.6%	5432 (880) 2.8%
40-49	910* (655) 1.5%	108* (80) .2%	4505* (1365) 7.6%	858* (548) 1.4%	2438* (684) 4.1%	1710* (616) 2.9%
50-59	1022* (532) 1.7%	1264* (770) 2.1%	3558* (997) 5.8%	895* (686) 1.5%	1718* (656) 2.8%	1102* (665) 1.8%
70-79	1279* (486) 1.7%	587* (381) .8%	4484* (1421) 5.9%	1985* (857) 2.6%	5813* (1707) 7.7%	493* (420) .6%
80	82* (47) 1.2%	56* (33) .8%	1067* (376) 15.1%	285* (87) 4.0%	1737 (400) 24.6%	117* (74) 1.7%
ALL	7830 (1290) 1.5%	7458 (1407) 1.5%	29176 (2680) 5.7%	11033 (1590) 2.2%	38327 (2698) 7.5%	10419 (1458) 2.0%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
...No facilities observed.



NUMBER AND PERCENT OF PLANTS WHICH MODIFIED EQUIPMENT  
OR PROCESSES IN THE PAST FIVE YEARS BY TYPE OF MODIFICATION

SIC CODE	REDESIGN PROCESS	ENCLOSING PROCESS	EQUIPMENT SUBSTITUTION	EQUIPMENT REDESIGN	COMBINATION OF REDESIGN/SUBSTITUTION	OTHER METHODS
07	162* (162) 2.9%	...	407* (289) 7.2%	151* (191) 2.7%	...	...
13	...	493* (553) 5.1%	48* (57) .5%	2* (2) .0%	1200* (524) 12.4%	...
15	...	162* (147) .6%	762* (446) 2.9%	175* (175) .7%	306* (198) 1.2%	884* (288) 3.4%
16	...	77* (86) .6%	553* (322) 4.4%	215* (187) 1.7%	358* (198) 2.9%	329* (406) 2.6%
17	409* (213) .7%	...	1585* (736) 2.6%	587* (408) 1.0%	575* (301) 1.0%	352* (219) .6%
20	392* (150) 2.6%	305* (247) 2.0%	1601* (415) 10.5%	787* (286) 5.2%	2749 (599) 18.1%	429* (259) 2.8%
21	43* (34) 39.5%	19* (45) 17.0%	...	...	37* (42) 33.6%	...
22	158* (134) 3.3%	...	439* (153) 9.1%	239* (166) 5.0%	672* (213) 14.0%	244* (86) 5.1%
23	150* (171) .9%	...	366* (215) 2.3%	66* (47) .4%	334* (134) 2.1%	406* (278) 2.6%
24	68* (63) .6%	268* (139) 2.2%	396* (177) 3.3%	274* (143) 2.3%	1821* (556) 15.2%	76* (68) .6%
25	199* (143) 3.7%	184* (133) 3.4%	207* (147) 3.9%	173* (133) 3.2%	313* (157) 5.9%	...
26	191* (94) 3.2%	257* (131) 4.4%	120* (101) 2.0%	348* (306) 5.9%	1540* (468) 26.1%	49* (46) .8%
27	347* (93) 1.7%	43* (46) .2%	1678* (499) 8.3%	619* (452) 3.1%	1928* (521) 9.5%	1157* (541) 5.7%
28	159* (108) 2.1%	74* (84) 1.0%	431* (212) 5.6%	630 (157) 8.2%	1419 (272) 18.4%	227* (125) 2.9%
29	176* (181) 12.5%	163* (123) 11.6%	...	93* (103) 6.6%	199* (98) 14.1%	170* (213) 12.1%
30	17* (20) .2%	77* (56) .9%	232* (140) 2.7%	291* (212) 3.4%	1403* (505) 16.6%	468* (281) 5.5%
31	50* (39) 3.3%	223* (195) 14.7%	...	22* (20) 1.4%	134* (81) 8.8%	...
32	694* (510) 6.9%	181* (140) 1.8%	292* (142) 2.9%	357* (180) 3.6%	1463* (513) 14.6%	273* (158) 2.7%
33	2* (2) .0%	180* (105) 3.0%	738* (247) 12.4%	235* (165) 4.0%	1495* (404) 25.2%	292* (147) 4.9%

SIC CODE	REDESIGN PROCESS	ENCLOSING PROCESS	EQUIPMENT SUBSTITUTION	EQUIPMENT REDESIGN	COMBINATION OF REDESIGN/SUBSTITUTION	OTHER METHODS
34	194* (86) .9%	578* (305) 2.6%	2117* (623) 9.6%	680* (377) 3.1%	2725 (629) 12.4%	893* (409) 4.1%
35	221* (129) .8%	1501* (689) 5.6%	1709* (465) 6.4%	408* (204) 1.5%	2783 (429) 10.4%	321* (184) 1.2%
36	628* (227) 5.9%	185* (169) 1.8%	288* (113) 2.7%	132* (72) 1.2%	1371 (279) 13.0%	134* (102) 1.3%
37	81* (51) 1.5%	95* (69) 1.7%	694* (327) 12.4%	212* (158) 3.8%	623 (144) 11.2%	196* (122) 3.5%
38	135* (67) 3.3%	348* (259) 8.6%	281* (156) 6.9%	90* (66) 2.2%	609* (222) 15.0%	79* (87) 1.9%
39	59* (133) .8%	30* (105) .4%	618* (376) 8.0%	223* (152) 2.9%	565* (590) 7.3%	19* (46) .2%
41	...	...	273* (251) 5.5%	...	...	97* (83) 2.0%
42	156* (153) .7%	105* (80) .5%	701* (361) 3.2%	210* (165) 1.0%	1255* (549) 5.8%	122* (115) .6%
45	38* (26) 1.0%	3* (4) .1%	97* (84) 2.4%	...	72* (47) 1.8%	122* (118) 3.1%
48	629* (631) 4.0%	...	3115* (1130) 19.9%	...	557* (373) 3.6%	680* (371) 4.3%
49	86* (68) .8%	...	281* (321) 2.7%	648* (505) 6.3%	476* (237) 4.6%	690* (433) 6.7%
50	164* (216) .5%	674* (617) 2.1%	1884* (684) 5.9%	190* (144) .6%	787* (358) 2.4%	1102* (665) 3.4%
51	711* (489) 7.6%	257* (216) 2.8%	1061* (607) 11.3%	90* (110) 1.0%	...	...
55	147* (125) .8%	332* (367) 1.7%	613* (463) 3.1%	616* (642) 3.2%	931* (580) 4.8%	...
72	13* (19) .1%	81* (74) .4%	2427* (1087) 11.4%	830* (557) 3.9%	2400* (997) 11.3%	113* (114) .5%
73	188* (190) 1.0%	29* (23) .2%	563* (308) 3.1%	649* (376) 3.5%	1113* (390) 6.0%	18* (20) .1%
75	864* (425) 3.3%	476* (383) 1.8%	1200* (606) 4.6%	507* (474) 1.9%	1690* (919) 6.4%	...
76	213* (148) 2.2%	...	294* (363) 3.0%	...	610* (774) 6.2%	362* (424) 3.7%
80	82* (47) 1.2%	56* (33) .8%	1067* (376) 15.1%	285* (87) 4.0%	1737 (400) 24.6%	117* (74) 1.7%
ALL	7830 (1143) 1.5%	7458 (1460) 1.5%	29138 (2129) 5.8%	11033 (1403) 2.2%	38275 (3108) 7.6%	10419 (1516) 2.1%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-55

NUMBER AND PERCENT OF WORKERS IN PLANTS WHICH MODIFIED EQUIPMENT  
OR PROCESSES IN THE PAST FIVE YEARS BY TYPE OF MODIFICATION

MAJOR GROUP	REDESIGN PROCESS	ENCLOSING PROCESS	EQUIPMENT SUBSTITUTION	EQUIPMENT REDESIGN	COMBINATION OF REDESIGN/ SUBSTITUTION	OTHER METHODS
07	4547* (4528) 4.1%	...	17066* (12218) 15.4%	10241* (12985) 9.3%	...	...
13	...	7392* (8299) 1.8%	2511* (2946) .6%	248* (236) .1%	101891* (40724) 24.6%	...
15-17	29856* (15806) 1.0%	10782* (7617) .4%	72735* (23179) 2.4%	18789* (8611) .6%	126387* (49066) 4.1%	56473* (25528) 1.8%
20-39	897644 (105251) 4.7%	722482 (107691) 3.8%	1268598 (180484) 6.6%	704536 (90501) 3.7%	6716502 (315467) 34.9%	617072 (132609) 3.2%
40-49	123349* (65771) 3.9%	56577* (49596) 1.8%	188728* (56601) 6.0%	86186* (52519) 2.7%	281896* (77656) 8.9%	198616* (92215) 6.3%
50-59	20244* (9691) 1.3%	33551* (19152) 2.2%	109903* (46395) 7.2%	17511* (11487) 1.1%	50220* (15649) 3.3%	27720* (17743) 1.8%
70-79	45714* (23426) 2.1%	35480* (16764) 1.6%	166052* (47661) 7.6%	54534* (13783) 2.5%	342759* (101229) 15.6%	24499* (15229) 1.1%
80	92648* (43074) 2.5%	112634* (55779) 3.1%	321177* (103275) 8.8%	253391* (77354) 6.9%	1516311 (260570) 41.4%	104798* (56212) 2.9%
ALL	1214001 (134803) 3.6%	978897 (133952) 2.9%	2146771 (227075) 6.4%	1145436 (132276) 3.4%	9135966 (433595) 27.3%	1029178 (174490) 3.1%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
...No facilities observed.



NUMBER AND PERCENT OF WORKERS IN PLANTS WHICH MODIFIED EQUIPMENT  
OR PROCESSES IN THE PAST FIVE YEARS BY TYPE OF MODIFICATION

SIC CODE	REDESIGN PROCESS	ENCLOSING PROCESS	EQUIPMENT SUBSTITUTION	EQUIPMENT REDESIGN	COMBINATION OF REDESIGN/ SUBSTITUTION	OTHER METHODS
07	4547* (4528) 4.1%	...	17066* (12218) 15.4%	10241* (12985) 9.3%	...	...
13	...	7392* (8299) 1.8%	2511* (2946) .6%	248* (236) .1%	101891* (40724) 24.6%	...
15	...	6141* (5597) .7%	23564* (16284) 2.6%	2269* (2269) .3%	51918* (30942) 5.8%	17350* (6169) 1.9%
16	...	4641* (5158) .8%	22145* (13911) 3.7%	3014* (2623) .5%	45071* (29050) 7.6%	27144* (24915) 4.6%
17	29856* (15806) 1.9%	...	27026* (12979) 1.7%	13505* (7857) .9%	29398* (16996) 1.9%	11980* (8140) .8%
20	129013* (62781) 8.3%	37864* (22248) 2.4%	152065* (40052) 9.8%	66704* (25257) 4.3%	483012 (101088) 31.1%	43080* (19063) 2.8%
21	56325* (44772) 49.4%	10657* (26041) 9.3%	...	...	43371* (35614) 38.0%	...
22	20553* (19307) 2.9%	...	116235* (67473) 16.3%	29689* (17956) 4.2%	232878* (82759) 32.6%	36599* (24675) 5.1%
23	2699* (3075) .2%	...	46335* (16758) 3.7%	53553* (39460) 4.3%	33707* (11543) 2.7%	41653* (29866) 3.4%
24	11292* (10494) 1.9%	90723* (63952) 15.7%	44961* (21310) 7.8%	12219* (7063) 2.1%	99082* (28910) 17.1%	11747* (10539) 2.0%
25	74703* (44083) 14.4%	20594* (19755) 4.0%	76006* (61196) 14.7%	5603* (4135) 1.1%	54045* (29531) 10.4%	...
26	45202* (23952) 7.2%	74558* (43670) 11.9%	9046* (7288) 1.4%	51613* (45250) 8.2%	214457* (70881) 34.3%	14662* (13760) 2.3%
27	78304* (32001) 6.6%	17397* (23421) 1.5%	95118* (35553) 8.0%	33337* (30091) 2.8%	307538* (80105) 26.0%	76461* (34106) 6.5%
28	50027* (26487) 5.5%	16621* (15602) 1.8%	23727* (13368) 2.6%	129721* (50373) 14.1%	367095 (71200) 40.0%	21464* (8631) 2.3%
29	11069* (11377) 5.0%	41662* (28474) 18.8%	...	3264* (3617) 1.5%	98980* (69455) 44.6%	6796* (8540) 3.1%
30	3324* (3928) .4%	10254* (10643) 1.4%	8395* (4644) 1.1%	42349* (30197) 5.6%	301777* (75617) 40.1%	22784* (20015) 3.0%
31	2188* (1707) 1.2%	5587* (4876) 3.2%	...	11650* (10428) 6.6%	34433* (21440) 19.6%	...
32	20272* (10077) 3.5%	7841* (6273) 1.4%	24312* (15101) 4.2%	29229* (14883) 5.1%	161664* (49091) 28.1%	48455* (45559) 8.4%
33	306* (309) .0%	32045* (18740) 3.0%	38735* (13947) 3.6%	21783* (13884) 2.0%	544062 (81250) 50.8%	37125* (16614) 3.5%



SIC CODE	REDESIGN PROCESS	ENCLOSING PROCESS	EQUIPMENT SUBSTITUTION	EQUIPMENT REDESIGN	COMBINATION OF REDESIGN/SUBSTITUTION	OTHER METHODS
34	22136* (11413) 1.5%	82633* (34903) 5.5%	128941* (44874) 8.6%	25648* (10595) 1.7%	340995* (91808) 22.7%	58396* (25282) 3.9%
35	42433* (24914) 1.8%	90665* (25143) 3.8%	111742* (29628) 4.7%	27350* (12229) 1.7%	1041683 (127164) 43.8%	60974* (36338) 2.6%
36	209748 (49433) 10.7%	53128* (45290) 2.7%	125554* (63149) 6.4%	51764* (29135) 2.6%	807380 (89838) 41.7%	74151* (60800) 3.8%
37	80879* (23620) 4.3%	97879* (54444) 5.2%	169060* (92020) 9.0%	77097* (50630) 4.1%	1103260 (254669) 58.7%	40728* (20831) 2.2%
38	28205* (22049) 3.7%	28728* (18391) 3.8%	58097* (37310) 7.7%	12504* (9688) 1.6%	398246* (117885) 52.4%	14395* (37020) 1.9%
39	8966* (19780) 1.7%	3644* (12834) .7%	40269* (23446) 7.7%	19460* (17797) 3.7%	48837* (134009) 9.3%	7602* (17649) 1.4%
41	...	...	11472* (10554) 5.8%	...	...	11518* (9829) 5.8%
42	4376* (4273) .5%	16675* (12650) 2.0%	38915* (23448) 4.7%	17574* (10829) 2.7%	42843* (13397) 5.2%	6087* (5758) .7%
45	51932* (40473) 11.5%	39902* (51083) 8.8%	25043* (19859) 5.6%	...	74869* (61331) 16.6%	57819* (48863) 12.8%
48	54505* (47211) 8.1%	...	95852* (35865) 14.3%	...	41681* (23239) 6.2%	24717* (16405) 3.7%
49	12535* (9909) 1.5%	...	15512* (15669) 1.8%	68612* (45026) 8.2%	92547* (40078) 11.0%	98475* (49684) 11.7%
50	3440* (4533) .4%	16714* (15165) 1.8%	87076* (42201) 9.5%	5199* (4167) .6%	36262* (16404) 4.0%	27720* (17743) 3.0%
51	10169* (6927) 4.8%	9525* (8002) 4.5%	12363* (6820) 5.8%	4923* (6034) 2.3%	...	...
55	6635* (5622) 1.6%	7312* (8079) 1.8%	10464* (7229) 2.6%	7390* (7710) 1.8%	13958* (8710) 3.4%	...
72	10670* (15114) 2.3%	8627* (7858) 1.8%	78372* (29728) 16.6%	16333* (9668) 3.5%	36468* (13685) 7.7%	9182* (8180) 1.9%
73	11762* (10443) 1.1%	22095* (16084) 2.0%	61280* (30274) 5.6%	31616* (10622) 2.9%	265018* (99928) 24.1%	9894* (11061) .9%
75	7210* (3553) 1.7%	4758* (3833) 1.1%	22583* (11705) 5.4%	6585* (6164) 1.6%	31550* (16231) 7.5%	...
76	16072* (11435) 7.9%	...	3817* (4721) 1.9%	...	9722* (11653) 4.8%	5423* (6355) 2.7%
80	92648* (43074) 2.5%	112634* (55779) 3.1%	321177* (103275) 8.8%	253391* (77354) 6.9%	1516311 (260570) 41.4%	104798* (56212) 2.9%
ALL	1214001 (141221) 3.7%	978897 (131750) 2.9%	2144836 (220760) 6.4%	1145436 (126723) 3.4%	9115098 (396457) 27.4%	1029178 (153532) 3.1%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**NOES QUESTIONNAIRE ITEM NO. 45  
Plants Which Recirculate Exhaust Air**

**Intent**

The intent of this question was to determine whether a plant recirculated exhaust air.

This item was displayed on the questionnaire as:

45. Does this facility recirculate exhaust air from any process or plant area?

- 1 Yes
- 2 No (Skip to Question 47)

**Notes**

Recirculation of exhaust air was considered to be the capture of exhaust air from a process or work area, and re-introduction of that air back into the facility, usually following treatment to remove contaminants.

Standard heating or cooling systems were not considered to recirculate exhaust air.

Catalytic converters or scrubbing devices attached to the exhausts of stationary or mobile internal combustion engines within the plant were not considered recirculation systems.

**Analysis**

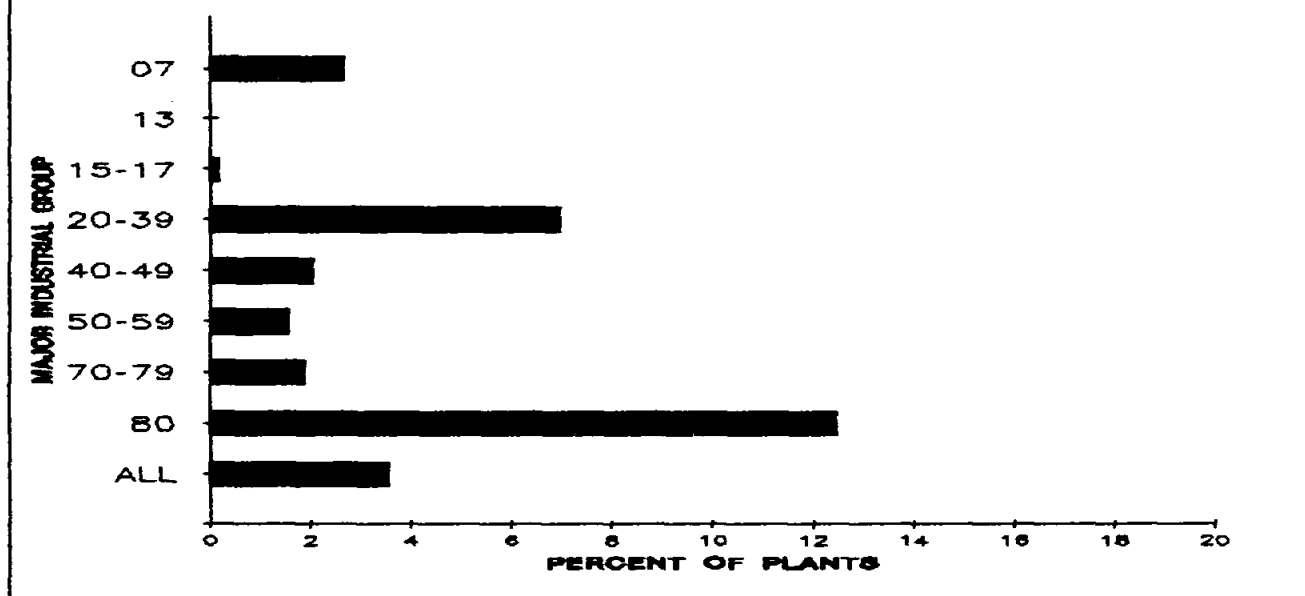
One analysis of the response to question 45 is presented.

**Response 45.1 - Exhaust air from the facility recirculated**

The estimates of the plants which recirculate exhaust air from a process or work area back into the facility, and workers in those plants (by number and proportion of the total) are displayed in Figures IV-75, IV-76, and IV-77, and Tables IV-7 and IV-58.

Figure IV-75	Plants which recirculate exhaust air (by major industrial group)
Figure IV-76	Plants which recirculate exhaust air (by 2-digit SIC)
Figure IV-77	Plants recirculating exhaust air
Table IV-57	Number and percent of plants and employees in plants which recirculate exhaust air from within the plant (by major industrial group)
Table IV-58	Number and percent of plants and employees in plants which recirculate exhaust air from within the plant (by 2-digit SIC)

**FIGURE IV - 75**  
**PLANTS WHICH RECIRCULATE EXHAUST AIR**  
**(NOES 1981-1983)**



NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-57

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 RECIRCULATE EXHAUST AIR FROM WITHIN THE PLANT

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	151* (191) 2.7%	...	...	151* (191) 2.7%	10241* (12985) 9.9%	...	...	10241* (12985) 9.3%
13	...	...	...	...	...	...	...	...
15-17	204* (174) .2%	33* (42) .8%	5* (5) 2.1%	243* (173) .2%	6131* (5220) .3%	5063* (5111) .7%	20157* (21701) 8.5%	31351* (24105) 1.0%
20-39	8275 (1368) 5.4%	3551 (460) 11.2%	1532 (142) 24.4%	13358 (1618) 7.0%	290048 (42750) 6.3%	839713 (98771) 13.2%	2813432 (215319) 34.0%	3943193 (268723) 20.5%
40-49	1042* (387) 2.0%	207* (170) 3.5%	21* (16) 4.4%	1269* (439) 2.1%	50357* (18634) 3.5%	35306* (24376) 3.1%	106224* (71433) 18.5%	191888* (79737) 6.1%
50-59	845* (616) 1.4%	102* (109) 3.8%	...	947* (605) 1.6%	13190* (8168) 1.2%	12776* (13634) 3.1%	...	25966* (14628) 1.7%
70-79	1447* (762) 2.0%	...	20* (16) 5.6%	1466* (756) 1.9%	24518* (12973) 1.8%	...	63584* (60307) 18.7%	88101* (58147) 4.0%
80	386* (318) 13.6%	184* (87) 8.5%	311* (104) 15.1%	881* (343) 12.5%	9100* (6238) 9.0%	51407* (25201) 9.6%	442053* (139461) 14.6%	502561* (136275) 13.7%
ALL	12349 (1775) 2.7%	4077 (512) 8.2%	1888 (177) 20.0%	18315 (1983) 3.6%	403584 (51426) 3.6%	944265 (105816) 9.6%	3445451 (273902) 27.6%	4793300 (318568) 14.3%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

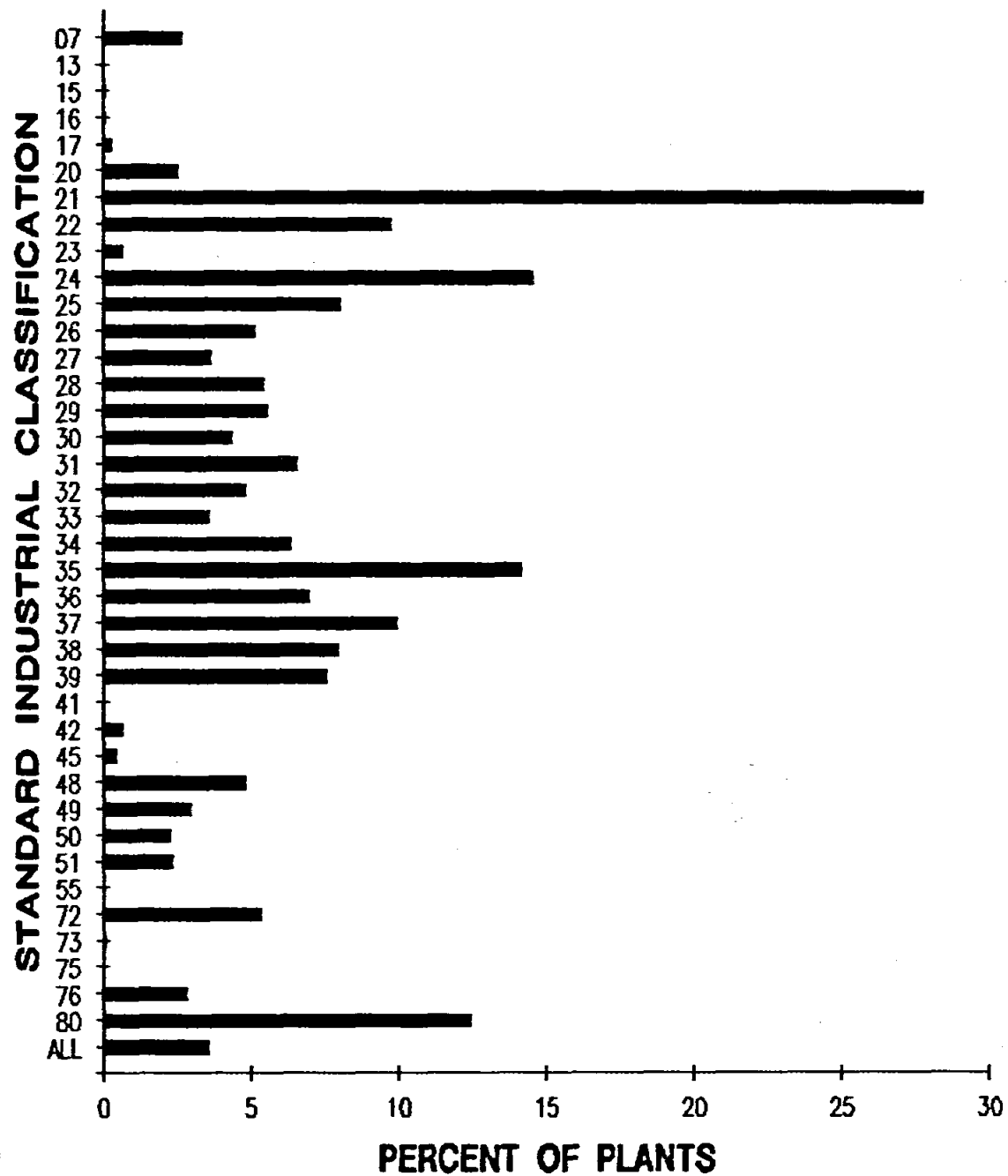
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
RECIRCULATE EXHAUST AIR FROM WITHIN THE PLANT

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	151* (191) 2.7%	...	...	151* (191) 2.7%	10241* (12985) 9.9%	...	...	10241* (12985) 9.3%
13	...	...	...	...	...	...	...	...
15	...	16* (14) 1.4%	5* (5) 3.7%	21* (15) .1%	...	3106* (2726) 1.6%	20157* (21701) 15.0%	23263* (22293) 2.6%
16	...	18* (40) 1.6%	...	18* (40) .1%	...	1958* (4440) .9%	...	1958* (4440) .3%
17	204* (174) .4%	...	...	204* (174) .3%	6131* (5220) .5%	...	...	6131* (5220) .4%
20	...	332* (137) 10.3%	65* (36) 11.7%	397* (145) 2.6%	...	80797* (39395) 12.0%	78452* (54237) 16.0%	159249* (71134) 10.2%
21	...	...	30* (56) 38.3%	30* (56) 27.8%	...	...	43486* (35484) 38.8%	43486* (35484) 38.1%
22	134* (167) 4.6%	276* (133) 17.4%	64* (48) 21.4%	474* (195) 9.8%	3218* (4005) 3.0%	76875* (37812) 22.1%	87416* (70827) 33.5%	167509* (71309) 23.5%
23	...	64* (46) 2.1%	47* (41) 19.4%	111* (77) .7%	...	18912* (13600) 3.1%	47062* (40984) 22.6%	65974* (49731) 5.3%
24	1380* (609) 12.9%	283* (125) 24.7%	85* (73) 82.1%	1749* (624) 14.6%	55435* (20843) 18.3%	63127* (28032) 34.4%	56588* (48232) 61.3%	175150* (76542) 30.2%
25	268* (129) 6.4%	148* (66) 13.9%	19* (15) 15.9%	435* (159) 8.1%	9529* (5161) 6.8%	52092* (23436) 20.3%	38134* (22387) 31.0%	99756* (32895) 19.2%
26	52* (70) 1.3%	186* (110) 11.9%	67* (55) 31.3%	306* (130) 5.2%	5195* (6955) 3.8%	20957* (12625) 7.4%	81466* (61087) 39.4%	107618* (58542) 17.2%
27	480* (268) 2.6%	226* (101) 12.1%	52* (38) 16.4%	758* (301) 3.7%	20240* (9922) 4.2%	68703* (31478) 19.0%	50621* (38624) 14.6%	139565* (56390) 11.8%
28	279* (140) 4.5%	81* (46) 7.0%	67* (40) 17.6%	428* (156) 5.5%	9771* (5287) 5.4%	32179* (18188) 12.3%	168721* (79531) 35.4%	210671* (77803) 23.0%
29	...	26* (35) 9.0%	53* (37) 52.0%	79* (52) 5.6%	...	4750* (6386) 7.5%	49608* (56454) 42.2%	54358* (57856) 24.5%
30	222* (121) 3.3%	61* (63) 4.0%	93* (73) 41.4%	376* (126) 4.4%	12433* (7172) 5.5%	12345* (12003) 4.2%	81772* (66697) 35.0%	106550* (67483) 14.1%
31	...	101* (57) 17.8%	...	101* (57) 6.6%	...	23806* (13298) 17.6%	...	23806* (13298) 13.5%
32	289* (287) 3.3%	151* (88) 14.9%	46* (29) 25.2%	487* (340) 4.9%	12458* (11281) 5.3%	50395* (29280) 24.1%	39389* (25098) 30.5%	102242* (41364) 17.8%
33	63* (64) 1.5%	117* (72) 8.0%	34* (21) 10.0%	214* (82) 3.6%	1390* (1402) 1.0%	40367* (21685) 13.0%	74961* (47839) 12.1%	116718* (48820) 10.9%

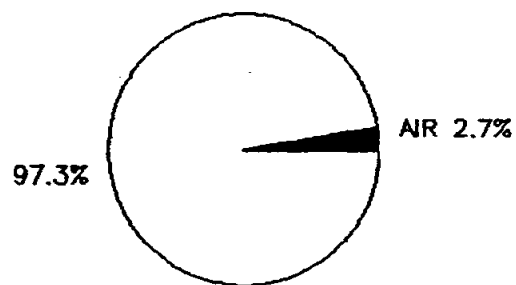
SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	877* (358) 4.7%	419* (111) 13.4%	103* (68) 29.7%	1399* (414) 6.4%	36619* (10949) 6.6%	79342* (20014) 13.3%	124038* (89798) 35.3%	239999* (93351) 16.0%
35	3173* (851) 14.0%	424* (113) 12.4%	213 (41) 27.1%	3810 (856) 14.2%	86211 (15925) 14.2%	79077* (26443) 12.0%	380778 (58454) 34.2%	546066 (63662) 22.9%
36	134* (167) 1.9%	376* (140) 14.0%	235* (83) 29.8%	745* (246) 7.0%	3630* (4522) 1.6%	72534* (23204) 13.1%	383786* (106102) 32.5%	459950 (104480) 23.4%
37	280* (176) 7.1%	133* (110) 11.2%	143 (33) 34.3%	556* (214) 10.0%	13749* (8929) 10.8%	39389* (30774) 16.5%	833007 (203140) 55.0%	886145 (208854) 47.1%
38	178* (121) 6.6%	54* (30) 5.7%	91* (79) 21.8%	323* (153) 8.0%	8964* (5696) 8.6%	10091* (6576) 5.2%	160149* (119572) 34.8%	179204* (120131) 23.6%
39	462* (282) 7.1%	94* (224) 11.8%	26* (19) 7.7%	582* (373) 7.6%	11206* (4946) 6.8%	13975* (29135) 9.4%	33998* (22428) 16.2%	59178* (38477) 11.3%
41	...	...	...	...	...	...	...	...
42	137* (93) .7%	16* (16) 1.1%	...	153* (94) .7%	5096* (3941) 1.0%	6910* (6767) 2.7%	...	12005* (7797) 1.5%
45	...	...	21* (16) 14.0%	21* (16) .5%	...	...	106224* (71433) 40.2%	106224* (71433) 23.5%
48	762* (487) 5.2%	...	...	762* (487) 4.9%	36719* (23341) 8.6%	...	...	36719* (23341) 5.5%
49	142* (126) 1.7%	164* (165) 8.8%	...	306* (198) 3.0%	8543* (7579) 3.2%	20766* (20968) 4.9%	...	29308* (21606) 3.5%
50	624* (541) 2.1%	102* (109) 5.7%	...	726* (533) 2.3%	9874* (7416) 1.6%	12776* (13634) 4.5%	...	22650* (14504) 2.5%
51	221* (223) 2.4%	...	...	221* (223) 2.4%	3316* (3348) 1.8%	...	...	3316* (3348) 1.6%
55	...	...	...	...	...	...	...	...
72	1157* (759) 5.6%	...	...	1157* (759) 5.4%	19007* (12561) 5.0%	...	...	19007* (12561) 4.0%
73	...	...	20* (16) 5.8%	20* (16) .1%	...	...	63584* (60307) 19.3%	63584* (60307) 5.8%
75	...	...	...	...	...	...	...	...
76	290* (417) 3.0%	...	...	290* (417) 2.9%	5511* (7915) 3.1%	...	...	5511* (7915) 2.7%
80	386* (318) 13.6%	184* (87) 8.5%	311* (104) 15.1%	881* (343) 12.5%	9100* (6238) 9.0%	51407* (25201) 9.6%	442053* (139461) 14.6%	502561* (136275) 13.7%
ALL	12349 (1795) 2.8%	4050 (442) 8.2%	1888 (206) 20.0%	18288 (1970) 3.6%	403584 (54700) 3.7%	936634 (97512) 9.6%	3445451 (306250) 27.7%	4785670 (361267) 14.4%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

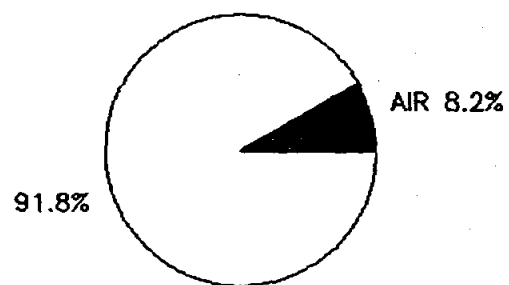
**FIGURE IV - 76**  
**PLANTS WHICH RECIRCULATE EXHAUST AIR**  
**(NOES 1981-1983)**



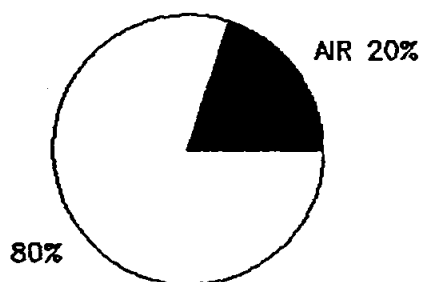
**FIGURE IV - 77**  
**PLANTS RECIRCULATING EXHAUST AIR**  
**(NOES 1981-1983)**



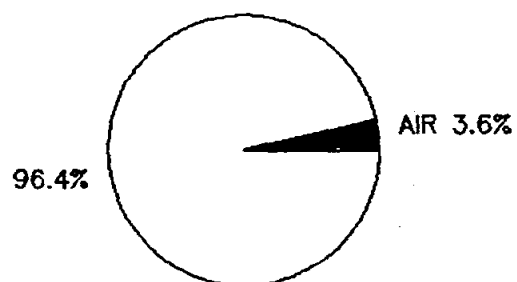
SMALL



MEDIUM



LARGE



ALL

**NOES QUESTIONNAIRE ITEM NO. 46**  
**Areas of the Facility Involved in Recirculation of Exhaust Air**

**Intent**

The intent of this question was to determine which areas of the facility provided or received exhaust air.

This item was displayed on the questionnaire as:

46. What processes or areas are involved?


**Notes**

No analysis of this question was done for this publication.

This is because the responses were recorded as free text and could not readily be encoded for computer processing.

Those interested in the data available on this question should contact NIOSH for further explanation and to arrange for the specialized processing that most closely meets their needs and definitions of plant areas.



**NOES QUESTIONNAIRE ITEM NO 47**  
**Use of Personal Protective Devices Required or Recommended**

**Intent**

The intent of this question was to determine the policy of plant management regarding the use of personal protective devices.

This item was displayed on the questionnaire as:

47. Are there areas in this facility in which personal protective devices or equipment are required or recommended?

- 1 Yes, required
- 2 Yes, recommended
- 3 Yes, both
- 4 No (Skip to Question 53)

**Notes**

To require the use of personal protective devices meant that there was a formal management policy that some or all employees must use protective devices as a condition of employment.

To recommend the use of personal protective devices means that management encouraged the use of the protective devices, but did not make employment conditional on their use.

Personal protective devices and equipment include, but are not limited to; safety glasses, goggles, ear plugs, face shields, hard hats, gloves, safety shoes, rubberized clothing, welding helmets, and respirators.

**Analysis**

Two analyses of the responses to question 47 are presented.

- (1) Responses 47.1, 47.2, or 47.3 - Personal protective devices required and/or recommended

The estimates of the plants which require and/or recommend the use of personal protective devices, and workers in those plants (by number and proportion of the total) are displayed in Figures IV-78, IV-79, IV-80, and IV-81, and Tables IV-59 and IV-60.

Figure IV-78	Workers in plants which require or recommend personal protective devices (by major industrial group)
Figure IV-79	Workers in plants which require or recommend personal protective devices (by 2-digit SIC)
Figure IV-80	Plants which require or recommend personal protective devices (by major industrial group)

**Figure IV-81**      **Plants which require or recommend personal protective devices**

**(by 2-digit SIC)**

**Table IV-59**      **Number and percent of plants and employees in plants which require or recommend personal protective devices (by major industrial group)**

**Table IV-60**      **Number and percent of plants and employees in plants which require or recommend personal protective devices (by 2-digit SIC)**

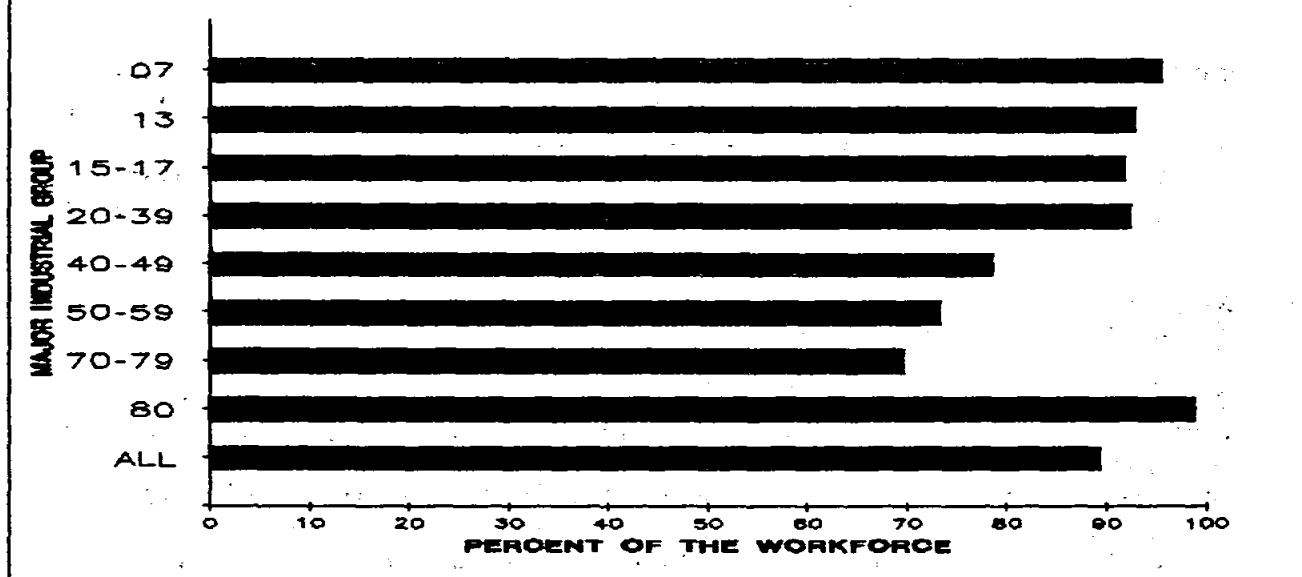
**(2) Responses 47.1, 47.2, 47.3, and 47.4 - Management policy on the use of personal protective devices**

**The estimated proportions of plants by size category, and workers in those plants, for each of the four possible management policies (require, recommend, require and recommend, no policy) regarding the use of personal protective devices are presented in Figures IV-82 and IV-83.**

**Figure IV-82**      **Management personal protective device policy by proportion of workers in plants**

**Figure IV-83**      **Management personal protective device policy by proportion of plants and plant size**

**FIGURE IV - 78**  
**WORKERS IN PLANTS WHICH REQUIRE OR RECOMMEND**  
**PERSONAL PROTECTIVE DEVICES**  
**(NOES 1981-1983)**



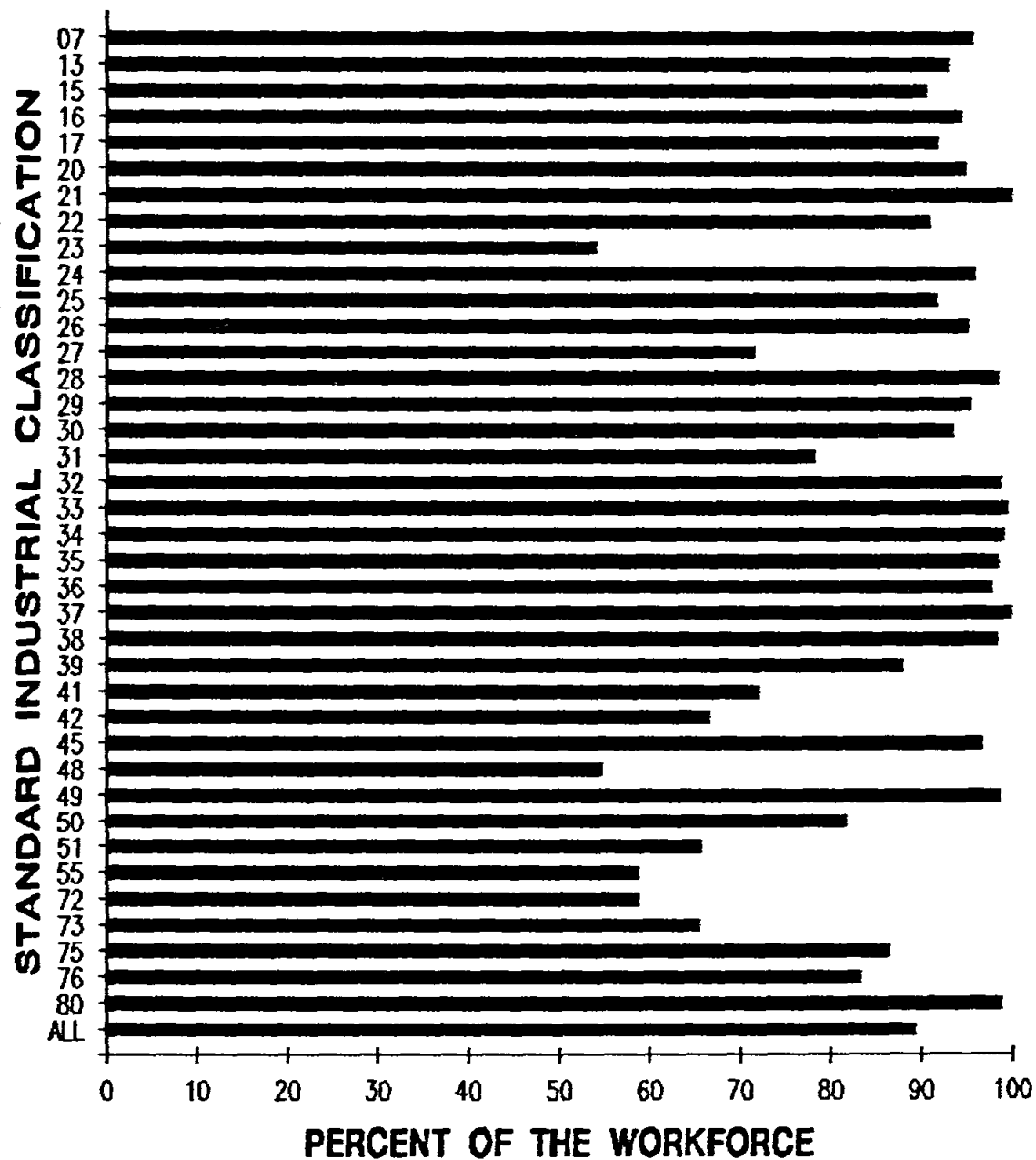
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-59

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 REQUIRE OR RECOMMEND PERSONAL PROTECTIVE DEVICES

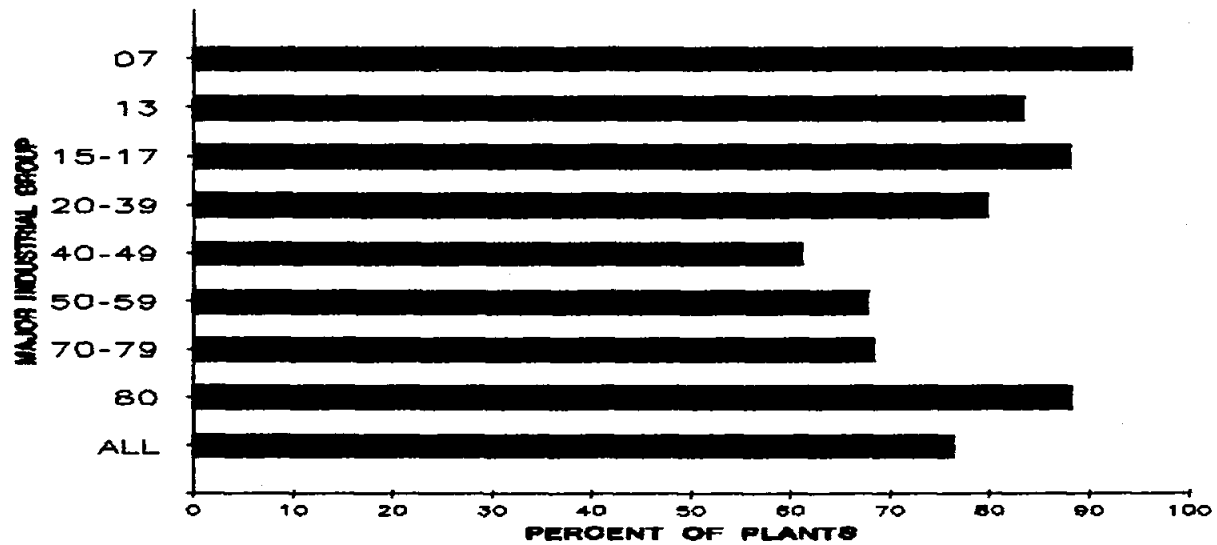
MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	5247* (1508) 94.3%	70* (67) 100.0%	...	5317* (1490) 94.4%	98941* (29820) 95.4%	7009* (6680) 100.0%	...	105950* (28404) 95.7%
13	7016 (1481) 81.6%	1019* (331) 100.0%	46* (52) 100.0%	8081 (1619) 83.6%	180260 (30472) 86.3%	173943* (58021) 100.0%	31383* (35291) 100.0%	385585 (94484) 93.1%
15-17	82840 (2760) 87.8%	4028 (508) 97.2%	220* (131) 90.9%	87087 (2669) 88.2%	1895914 (39796) 90.3%	723621 (103084) 98.2%	207866* (98220) 88.1%	2827400 (143199) 92.0%
20-39	117346 (2961) 76.6%	29504 (1825) 92.9%	6105 (184) 97.4%	152955 (3883) 80.0%	3681619 (62704) 79.8%	6001251 (357057) 94.1%	8161356 (247105) 98.7%	17844226 (524958) 92.6%
40-49	31210 (2499) 58.7%	4880 (994) 83.5%	449* (137) 96.0%	36540 (2645) 61.4%	940320 (91776) 65.6%	1003374 (216134) 87.0%	547973 (108850) 95.5%	2491667 (261278) 78.8%
50-59	39484 (3087) 67.6%	2041* (536) 76.8%	...	41525 (3153) 68.0%	823249 (73269) 73.2%	303773* (78962) 74.3%	...	1127022 (111619) 73.5%
70-79	50155 (3146) 68.6%	1506 (238) 64.2%	318* (147) 90.0%	51980 (3085) 68.5%	918252 (60689) 65.9%	312873 (50861) 67.4%	304904* (120654) 89.8%	1536029 (123989) 69.9%
80	2121* (661) 74.7%	2065 (248) 95.3%	2061 (304) 100.0%	6247 (635) 88.4%	88504 (20616) 87.1%	513914 (72238) 96.2%	3022676 (359103) 100.0%	3625094 (348207) 99.1%
ALL	335420 (6853) 74.7%	45112 (2258) 90.2%	9200 (432) 97.4%	389733 (7341) 76.6%	8627058 (158848) 77.9%	9039758 (449757) 91.7%	12276158 (476774) 98.5%	29942974 (723304) 89.6%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE IV - 79**  
**WORKERS IN PLANTS WHICH REQUIRE OR RECOMMEND**  
**PERSONAL PROTECTIVE DEVICES**  
**(NOES 1981-1983)**



**FIGURE IV - 80**  
**PLANTS WHICH REQUIRE OR RECOMMEND**  
**PERSONAL PROTECTIVE DEVICES**  
**(NOES 1981-1983)**



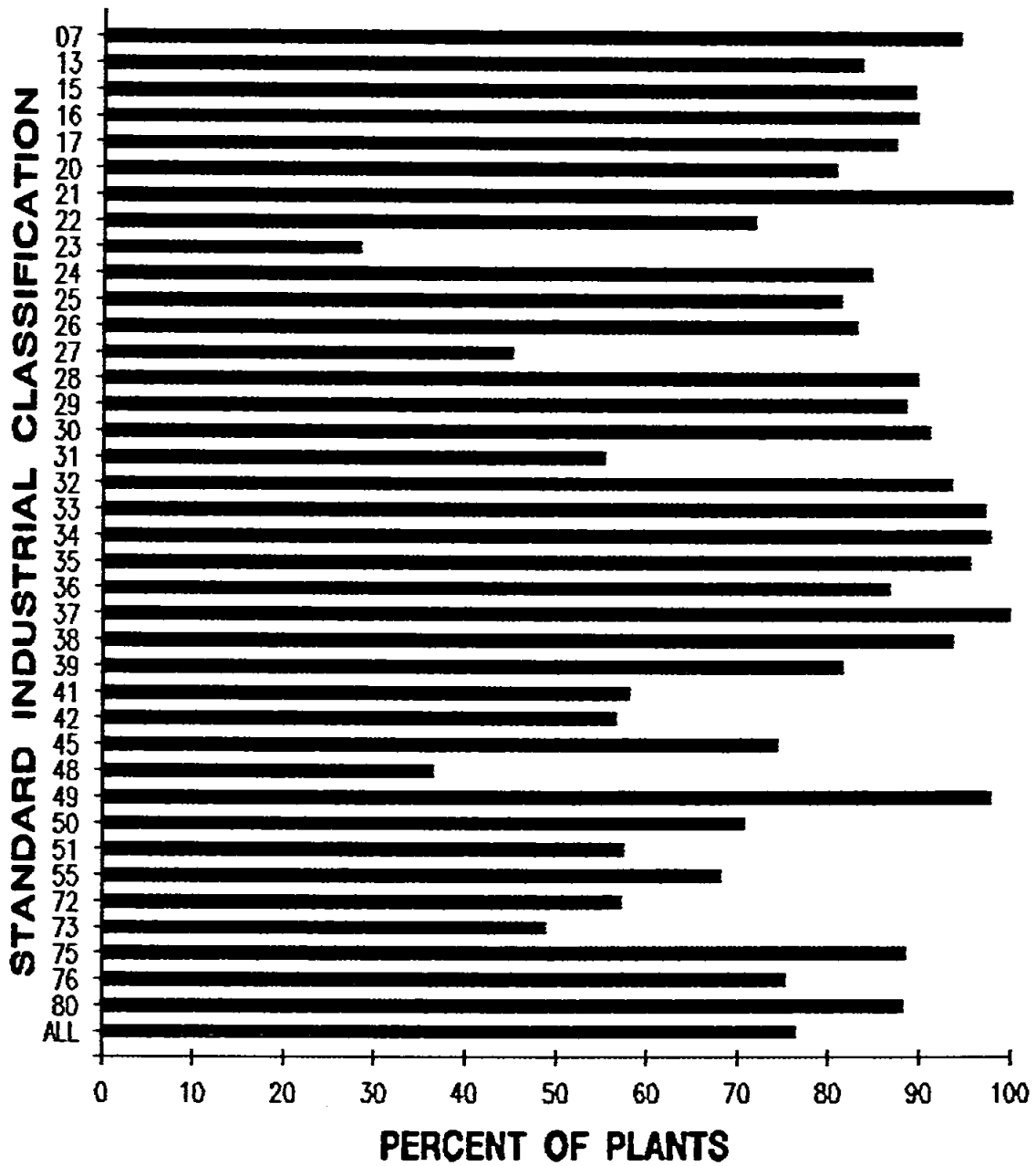
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
REQUIRE OR RECOMMEND PERSONAL PROTECTIVE DEVICES

SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	5247* (1508) 94.3%	70* (67) 100.0%	...	5317* (1490) 94.4%	98941* (29820) 95.4%	7009* (6680) 100.0%	...	105950* (28404) 95.7%
13	7016 (1481) 81.6%	1019* (331) 100.0%	46* (52) 100.0%	8081 (1619) 83.6%	180260 (30472) 86.3%	173943* (58021) 100.0%	31383* (35291) 100.0%	385585 (94484) 93.1%
15	22140 (1716) 88.9%	1107 (197) 100.0%	130* (98) 96.4%	23377 (1751) 89.4%	494563 (43880) 87.9%	198218 (38188) 100.0%	118577* (67614) 88.0%	811359 (91027) 90.6%
16	10019 (1484) 88.8%	1119 (194) 100.0%	90* (66) 84.0%	11227 (1456) 89.7%	264209 (47655) 93.0%	207759 (44051) 100.0%	89288* (54040) 88.2%	561256 (85171) 94.6%
17	50681 (2239) 87.2%	1802 (399) 93.9%	...	52483 (2191) 87.4%	1137142 (35053) 90.8%	317644 (78366) 95.9%	...	1454786 (74790) 91.9%
20	8577 (730) 75.2%	3154 (457) 98.1%	559 (121) 100.0%	12291 (957) 80.9%	316281 (17594) 81.4%	666400 (106193) 98.9%	491775 (104930) 100.0%	1474456 (115473) 94.9%
21	30* (43) 100.0%	...	79* (56) 99.6%	109* (65) 100.0%	1866* (2685) 100.0%	...	112133* (67572) 100.0%	113999* (66861) 100.0%
22	1793 (289) 61.1%	1378 (169) 86.8%	299* (80) 99.9%	3469 (356) 72.0%	70910 (15417) 66.9%	317614 (29835) 91.5%	261093* (94186) 100.0%	649617 (89208) 91.0%
23	2264* (697) 18.1%	2093 (163) 67.5%	169* (79) 69.9%	4526 (692) 28.5%	82915 (19825) 19.6%	427421 (38818) 70.1%	164313* (73101) 78.8%	674649 (75199) 54.3%
24	8888 (732) 83.0%	1148 (128) 100.0%	104* (74) 100.0%	10140 (729) 84.8%	280403 (23560) 92.3%	183585 (22297) 100.0%	92355* (52501) 100.0%	556342 (72853) 96.0%
25	3245 (474) 77.9%	989 (164) 93.1%	119* (75) 99.6%	4353 (523) 81.4%	114616 (19480) 82.4%	238526 (40846) 93.0%	122998* (62394) 100.0%	476140 (79355) 91.8%
26	3166 (659) 77.0%	1526 (259) 97.2%	214* (73) 100.0%	4906 (670) 83.2%	118389 (18211) 86.0%	271225 (50704) 96.4%	206864* (65220) 100.0%	596478 (93151) 95.3%
27	7413 (893) 40.9%	1497 (173) 79.9%	284* (105) 89.9%	9194 (905) 45.3%	229846 (21771) 48.1%	301860 (49797) 83.6%	319539 (77479) 92.4%	851246 (106498) 71.8%
28	5395 (410) 87.4%	1160 (93) 100.0%	380 (63) 100.0%	6935 (391) 89.9%	167678 (6133) 92.8%	260831 (27986) 100.0%	476341 (101388) 100.0%	904849 (105697) 98.6%
29	849* (458) 84.0%	293* (125) 100.0%	101* (42) 100.0%	1243* (512) 88.5%	31201* (14872) 76.1%	63255* (21394) 100.0%	117545* (70259) 100.0%	212002* (80585) 95.6%
30	6043 (1134) 90.0%	1503* (387) 97.8%	180* (67) 80.3%	7726 (1299) 91.2%	207338 (26497) 92.1%	290201* (82179) 98.5%	208455* (70884) 89.2%	705994 (109041) 93.7%
31	338* (265) 36.3%	482* (130) 84.7%	25* (24) 100.0%	845* (317) 55.4%	7646* (5786) 30.7%	114516* (33207) 84.5%	15664* (16901) 100.0%	137827* (38803) 78.3%
32	8156 (1117) 92.7%	1012 (142) 100.0%	184* (71) 99.9%	9352 (1143) 93.6%	230938 (16619) 97.4%	208984 (30484) 100.0%	128993* (49687) 100.0%	568915 (44673) 98.9%
33	3974 (465) 96.1%	1468 (138) 100.0%	337 (62) 100.0%	5779 (484) 97.3%	135739 (9874) 98.0%	311081 (30513) 100.0%	621499 (82456) 100.0%	1068319 (83840) 99.7%

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	18098 (1029) 97.7%	3090 (136) 99.0%	346 (83) 99.9%	21533 (988) 97.9%	548015 (9834) 98.8%	591855 (24278) 99.2%	351056* (100266) 100.0%	1490926 (107901) 99.2%
35	21576 (1092) 95.3%	3351 (117) 98.4%	768 (80) 98.0%	25696 (1137) 95.7%	590452 (9608) 97.3%	652555 (6839) 98.7%	1104496 (148819) 99.2%	2347502 (147770) 98.6%
36	5812 (709) 81.8%	2585 (84) 96.3%	787 (170) 100.0%	9184 (708) 86.8%	201022 (18188) 87.2%	541399 (7236) 98.0%	1182462 (196778) 100.0%	1924882 (192234) 97.9%
37	3973 (835) 100.0%	1190 (102) 100.0%	416 (92) 99.9%	5579 (804) 100.0%	127022 (16795) 100.0%	239184 (28491) 100.0%	1514008 (247233) 100.0%	1880214 (240481) 100.0%
38	2458 (521) 91.4%	938 (90) 98.1%	416* (139) 99.9%	3812 (565) 93.8%	96227 (13660) 92.0%	190983 (20114) 98.2%	460397* (129998) 100.0%	747607 (138766) 98.4%
39	5298 (700) 80.9%	647* (1167) 81.0%	338* (216) 100.0%	6283 (1375) 81.7%	123115 (16450) 74.2%	129775* (235957) 86.8%	209369* (120490) 100.0%	462260* (213026) 88.1%
41	2443* (834) 55.3%	427* (159) 83.7%	...	2870* (889) 58.2%	70881* (22225) 60.3%	72831* (35315) 89.3%	...	143712* (45518) 72.2%
42	11293 (1634) 56.4%	893* (226) 60.2%	79* (54) 96.1%	12264 (1661) 56.8%	306405 (51326) 62.8%	170123* (44021) 65.7%	72864* (49190) 97.4%	549392 (65278) 66.9%
45	2227* (771) 68.7%	590* (397) 99.9%	147* (57) 100.0%	2964* (846) 74.5%	63262* (22608) 81.6%	109332* (75829) 100.0%	264255* (77656) 100.0%	436849 (101575) 96.8%
48	5015 (1010) 34.1%	696 (165) 77.1%	18* (13) 52.4%	5729 (997) 36.6%	186032* (62734) 43.7%	136677* (38648) 77.5%	46280* (33466) 66.0%	368989 (75599) 54.9%
49	8010 (1696) 97.5%	1862* (567) 100.0%	173* (99) 99.8%	10045 (1922) 98.0%	260526 (57110) 96.7%	425470* (151076) 100.0%	146565* (65566) 100.0%	832561 (186923) 98.9%
50	21072 (2066) 69.4%	1713* (451) 95.0%	...	22784 (2078) 70.9%	482168 (65189) 76.5%	265348* (74485) 93.7%	...	747516 (109020) 81.8%
51	5161 (1163) 56.6%	237* (237) 100.0%	...	5398 (1263) 57.7%	112486* (32381) 60.8%	27013* (27013) 100.0%	...	139498* (48904) 65.8%
55	13252 (2395) 70.0%	91* (84) 14.7%	...	13343 (2415) 68.3%	228595 (49131) 74.0%	11413* (10448) 11.6%	...	240008 (52206) 58.9%
72	11815 (1612) 57.3%	406* (148) 60.1%	13* (19) 100.0%	12234 (1640) 57.4%	217182 (36374) 57.2%	51398* (19623) 62.5%	10670* (15114) 100.0%	279250 (47321) 59.0%
73	7804 (1333) 47.1%	918 (205) 61.7%	305* (139) 89.5%	9027 (1360) 49.0%	198957 (38708) 47.2%	228896 (48868) 65.5%	294234* (115014) 89.5%	722086 (121602) 65.6%
75	23213 (3466) 88.7%	59* (60) 99.7%	...	23272 (3478) 88.7%	357383 (52579) 86.5%	8238* (8380) 100.0%	...	365621 (53823) 86.7%
76	7324 (1735) 75.1%	123* (94) 100.0%	...	7447 (1768) 75.4%	144731 (24755) 81.1%	24341* (19716) 100.0%	...	169072 (37436) 83.4%
80	2121* (661) 74.7%	2065 (248) 95.3%	2061 (304) 100.0%	6247 (635) 88.4%	88504 (20616) 87.1%	513914 (72238) 96.2%	3022676 (359103) 100.0%	3625094 (348207) 99.1%
ALL	333198 (7920) 74.6%	44748 (988) 90.3%	9184 (400) 97.4%	387129 (7903) 76.6%	8573844 (138331) 77.8%	8966424 (141128) 91.7%	12261152 (485313) 98.5%	29807420 (505905) 89.6%

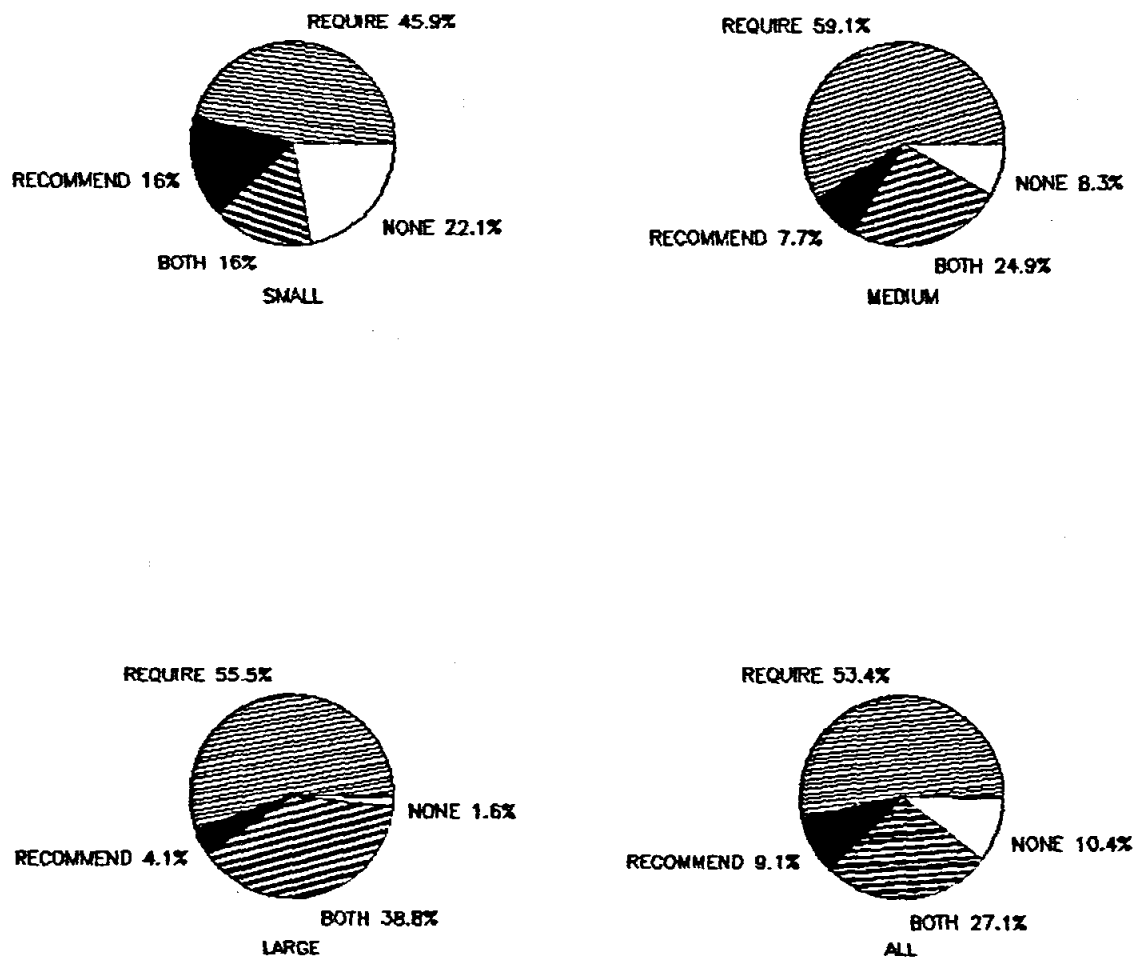
\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE IV - 81**  
**PLANTS WHICH REQUIRE OR RECOMMEND**  
**PERSONAL PROTECTIVE DEVICES**  
**(NOES 1981-1983)**

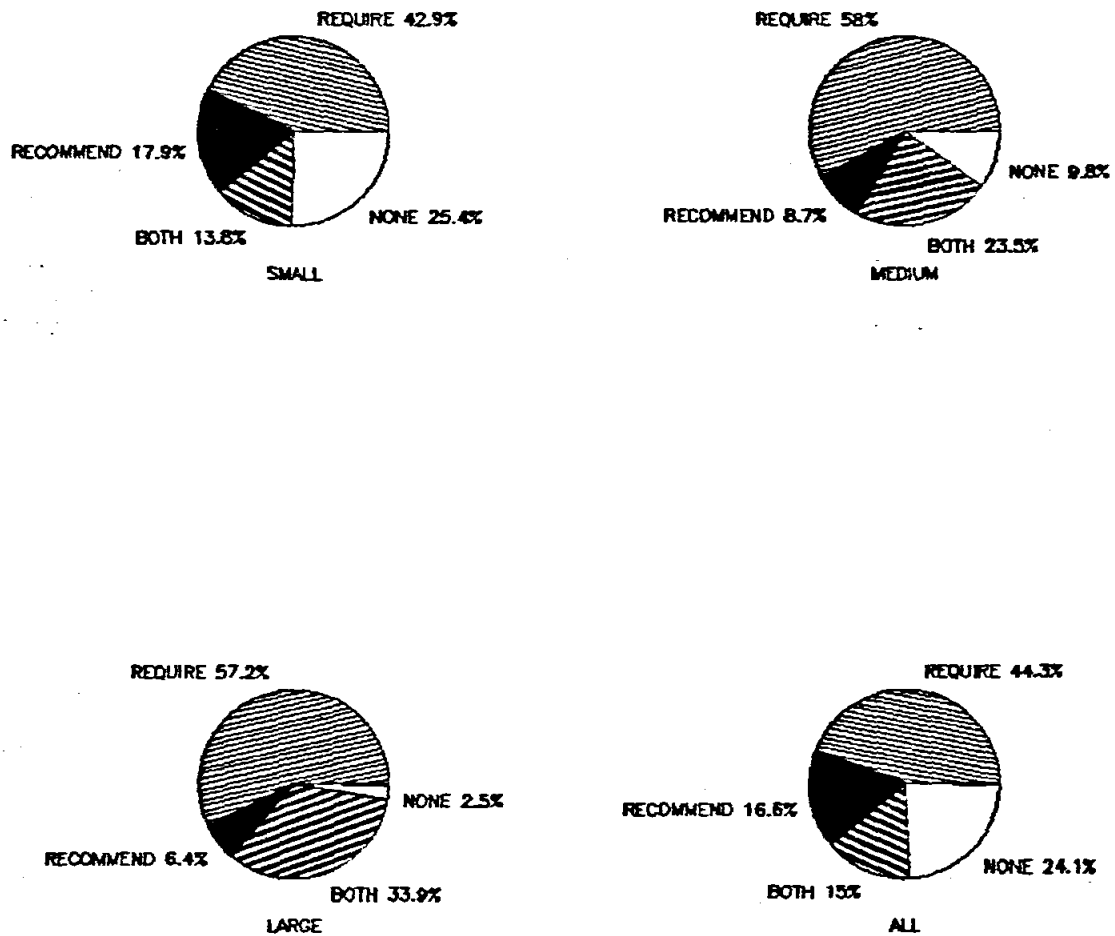




**FIGURE IV - 82**  
**MANAGEMENT PERSONAL PROTECTIVE DEVICE**  
**POLICY BY PROPORTION OF WORKERS IN PLANTS**  
**(NOES 1981-1983)**



**FIGURE IV - 83**  
**MANAGEMENT PERSONAL PROTECTIVE DEVICE POLICY**  
**BY PROPORTION OF PLANTS AND PLANT SIZE**  
**(NOES 1981-1983)**



**NOES QUESTIONNAIRE ITEM NO. 48**  
**Source of Personal Protective Devices Used by Workers**

**Intent**

The intent of this question was to determine who is financially responsible for the purchase of the personal protective devices used by workers.

This item was displayed on the questionnaire as:

48. Who provides personal protective devices?

- 1 individual employees
- 2 employer
- 3 both
- 4 other (specify) \_\_\_\_\_

**Notes**

This question was asked only of those who responded that there was a management policy to require or recommend the use of protective devices.

The response was coded according to financial responsibility. For example, if employees purchased their own equipment, but were reimbursed by the company, the employer was regarded as the source of equipment. If costs were shared, then "both" was the provider.

In the instances where the equipment was provided by such outside sources as unions or government agencies the "other" response was coded.

**Analysis**

Two analyses of the responses to question 48 are presented.

- (1) Response 48.2 - Employer provision of personal protective devices to workers

Estimates of the number and proportion of plants which provide personal protective gear to workers are displayed in Figures IV-84 and IV-85, and parts of Tables IV-61 and IV-62.

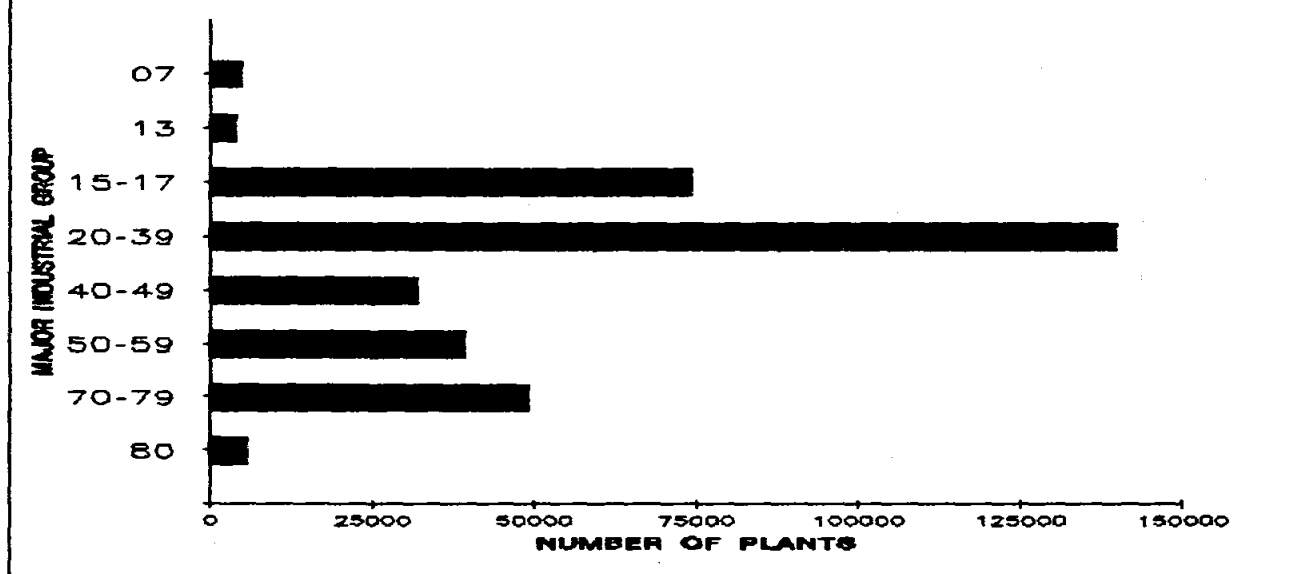
Figure IV-84	Number of plants providing personal protective devices to workers (by major industrial group)
Figure IV-85	Number of plants providing personal protective devices to workers (by 2-digit SIC)
Table IV-61	Number and percent of plants which require or recommend personal protective devices by provider (by major industrial group)
Table IV-62	Number and percent of plants which require or recommend personal protective devices by provider (by 2-digit SIC)

- (2) Responses 48.1, 48.2, 48.3, or 48.4 - Provision of protective devices by workers, employers, employers/workers, or other sources

Estimates of the number and percent of plants, and proportion of workers in plants where protective gear is provided by workers, employers, employers and workers, or other sources are displayed in Figures IV-86 and IV-87, and parts of Tables IV-61 and IV-62.

Figure IV-86	Source of protective devices by proportion of workers and plant size
Figure IV-87	Source of protective devices by proportion of plants and plant size
Table IV-61	Number and percent of plants which require or recommend personal protective devices by provider (by major industrial group)
Table IV-62	Number and percent of plants which require or recommend personal protective devices by provider (by 2-digit SIC)

**FIGURE IV - 84**  
**NUMBER OF PLANTS PROVIDING PERSONAL**  
**PROTECTIVE DEVICES TO WORKERS**  
**(NOES 1981-1983)**



NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-61

NUMBER AND PERCENT OF PLANTS WHICH REQUIRE OR RECOMMEND  
 PERSONAL PROTECTIVE DEVICES BY PROVIDER

MAJOR GROUP	EMPLOYER ONLY				EMPLOYEES/EMPLOYER, EMPLOYEES, OTHER			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	5247* (1508) 94.3%	...	...	5247* (1508) 93.2%	...	70* (67) 100.0%	...	70* (67) 1.2%
13	3525* (940) 41.0%	799* (261) 78.4%	46* (52) 100.0%	4370 (908) 45.2%	3491* (1012) 40.6%	220* (121) 21.6%	...	3711* (1074) 38.4%
15-17	70845 (2877) 75.1%	3535 (482) 85.3%	197* (125) 81.5%	74578 (2803) 75.5%	11994 (1840) 12.7%	493* (215) 11.9%	23* (22) 9.4%	12510 (1906) 12.7%
20-39	107886 (3101) 70.4%	26799 (1669) 84.4%	5321 (215) 84.9%	140006 (3825) 73.2%	9460 (1342) 6.2%	2705 (450) 8.5%	783 (148) 12.5%	12948 (1472) 6.8%
40-49	27377 (2535) 51.5%	4499 (1007) 77.0%	384* (114) 82.1%	32260 (2500) 54.3%	3834* (959) 7.2%	381* (181) 6.5%	65* (42) 14.0%	4280 (968) 7.2%
50-59	37849 (3145) 64.8%	1841* (543) 69.2%	...	39690 (3234) 65.0%	1635* (699) 2.8%	200* (116) 7.5%	...	1835* (706) 3.0%
70-79	47814 (3028) 65.4%	1314 (247) 56.0%	313* (146) 88.3%	49441 (2993) 65.2%	2342* (939) 3.2%	192* (119) 8.2%	6* (6) 1.6%	2540* (927) 3.3%
80	2121* (661) 74.7%	1978 (241) 91.3%	1935 (297) 93.9%	6035 (640) 85.4%	...	87* (50) 4.0%	126* (38) 6.1%	212* (67) 3.0%
ALL	302665 (6853) 67.4%	40765 (2124) 81.5%	8197 (433) 86.8%	351627 (7188) 69.1%	32755 (2915) 7.3%	4347 (575) 8.7%	1003 (160) 10.6%	38106 (3043) 7.5%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

NUMBER AND PERCENT OF PLANTS WHICH REQUIRE OR RECOMMEND  
PERSONAL PROTECTIVE DEVICES BY PROVIDER

SIC CODE	EMPLOYER ONLY				EMPLOYEES/EMPLOYER, EMPLOYEES, OTHER			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	5247* (1508) 94.3%	...	...	5247* (1508) 93.2%	...	70* (67) 100.0%	...	70* (67) 1.2%
13	3525* (940) 41.0%	799* (261) 78.4%	46* (52) 100.0%	4370 (908) 45.2%	3491* (1012) 40.6%	220* (121) 21.6%	...	3711* (1074) 38.4%
15	18558 (1349) 74.5%	999 (219) 90.2%	108* (95) 79.6%	19665 (1402) 75.2%	3582 (823) 14.4%	108* (76) 9.8%	23* (22) 16.8%	3713 (825) 14.2%
16	8471 (1597) 75.1%	886 (208) 79.2%	90* (66) 84.0%	9448 (1632) 75.5%	1547* (655) 13.7%	233* (147) 20.8%	...	1780* (659) 14.2%
17	43816 (2391) 75.4%	1650 (383) 86.0%	...	45465 (2314) 75.7%	6865 (1480) 11.8%	152* (111) 7.9%	...	7017 (1490) 11.7%
20	7346 (670) 64.4%	2960 (442) 92.0%	554 (121) 99.2%	10861 (809) 71.5%	1231* (474) 10.8%	194* (84) 6.0%	5* (6) .9%	1430* (495) 9.4%
21	30* (43) 100.0%	...	32* (61) 41.0%	63* (73) 57.5%	...	...	46* (37) 58.6%	46* (37) 42.5%
22	1793 (289) 61.1%	1228 (212) 77.3%	299* (80) 99.9%	3320 (388) 68.9%	...	150* (78) 9.4%	...	150* (78) 3.1%
23	2130* (644) 17.0%	2093 (163) 67.5%	127* (68) 52.3%	4350 (661) 27.4%	134* (131) 1.1%	...	43* (36) 17.6%	177* (138) 1.1%
24	8098 (815) 75.6%	973 (178) 84.7%	104* (74) 100.0%	9175 (777) 76.7%	790* (443) 7.4%	175* (100) 15.2%	...	965* (457) 8.1%
25	3245 (474) 77.9%	940 (148) 88.5%	119* (75) 99.6%	4303 (514) 80.5%	...	49* (31) 4.6%	...	49* (31) .9%
26	3022 (620) 73.5%	1265 (234) 80.6%	159* (57) 74.4%	4446 (588) 75.4%	144* (104) 3.5%	261* (140) 16.6%	55* (53) 25.8%	460* (180) 7.8%
27	7193 (814) 39.7%	1448 (196) 77.3%	231* (98) 73.3%	8873 (832) 43.7%	220* (221) 1.2%	48* (53) 2.6%	52* (43) 16.6%	321* (228) 1.6%
28	5339 (417) 86.5%	1160 (93) 100.0%	307 (56) 80.7%	6806 (403) 88.2%	56* (43) .9%	...	73* (37) 19.2%	129* (61) 1.7%
29	673* (437) 66.6%	211* (76) 71.8%	69* (40) 68.4%	953* (455) 67.8%	176* (181) 17.4%	83* (120) 28.3%	32* (31) 31.7%	291* (197) 20.7%
30	5631 (1138) 83.9%	1381* (399) 89.8%	173* (68) 77.1%	7185 (1304) 84.8%	412* (271) 6.1%	122* (65) 8.0%	7* (9) 3.2%	541* (251) 6.4%
31	338* (265) 36.3%	482* (130) 84.7%	25* (24) 100.0%	845* (317) 55.4%	...	...	...	...
32	7644 (1185) 86.9%	838 (167) 82.9%	184* (71) 99.9%	8666 (1229) 86.7%	512* (225) 5.8%	174* (109) 17.2%	...	685* (242) 6.9%
33	3268 (481) 79.1%	1429 (152) 97.4%	280 (58) 83.1%	4978 (486) 83.8%	706* (247) 17.1%	39* (84) 2.6%	57* (31) 16.9%	801* (260) 13.5%

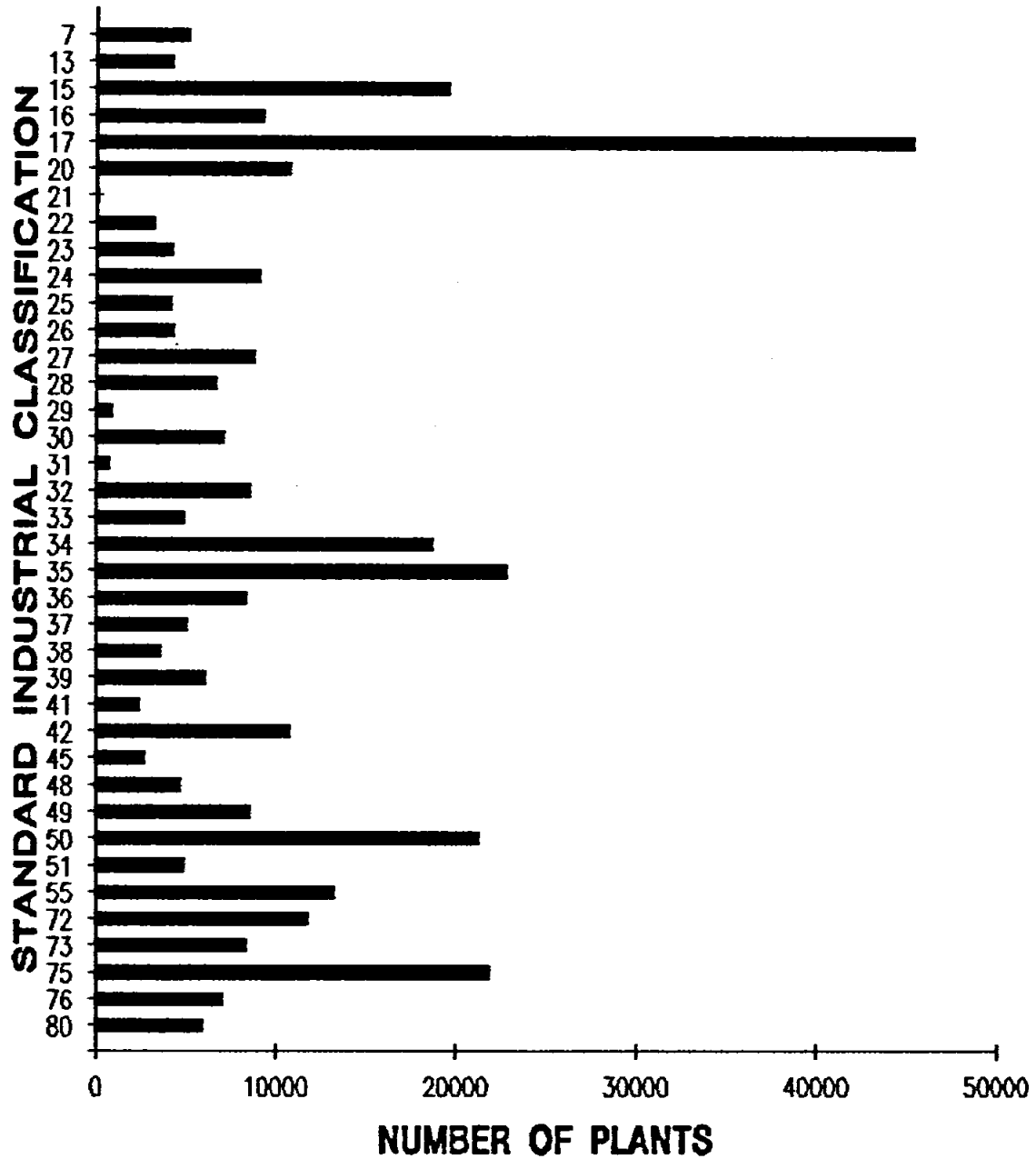
## NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983)

## TABLE NO. IV-62 (CONTINUED)

SIC CODE	EMPLOYER ONLY				EMPLOYEES/EMPLOYER, EMPLOYEES, OTHER			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	15814 (983) 85.4%	2770 (188) 88.7%	248 (61) 71.7%	18832 (945) 85.6%	2284 (558) 12.3%	320* (113) 10.2%	97* (75) 28.2%	2702 (599) 12.3%
35	19327 (1035) 85.3%	2890 (185) 84.9%	654 (80) 83.4%	22871 (1030) 85.2%	2249* (606) 9.9%	461* (143) 13.6%	114* (44) 14.6%	2825 (643) 10.5%
36	5635 (721) 79.3%	2135 (139) 79.5%	673 (126) 85.5%	8443 (727) 79.6%	176* (94) 2.5%	450* (157) 16.8%	115* (72) 14.6%	741* (217) 7.0%
37	3687 (848) 92.8%	1134 (89) 95.3%	346 (68) 83.1%	5167 (593) 92.6%	286* (130) 7.2%	56* (44) 4.7%	70* (55) 16.9%	412* (141) 7.4%
38	2433 (521) 90.5%	863 (110) 90.2%	400* (135) 96.2%	3696 (593) 91.0%	25* (38) .9%	75* (64) 7.9%	16* (22) 3.7%	116* (80) 2.8%
39	5238 (719) 79.9%	598* (1100) 74.9%	338* (216) 100.0%	6174 (1330) 80.3%	60* (63) .9%	49* (78) 6.1%	...	108* (93) 1.4%
41	2175* (756) 49.2%	335* (122) 65.7%	...	2510* (785) 50.9%	268* (223) 6.1%	92* (79) 18.0%	...	360* (244) 7.3%
42	10017 (1565) 50.0%	796* (223) 53.7%	54* (43) 65.4%	10866 (1584) 50.3%	1276* (616) 6.4%	97* (69) 6.5%	25* (26) 30.7%	1398* (595) 6.5%
45	2082* (810) 64.2%	590* (397) 99.9%	107* (48) 73.0%	2779* (874) 69.9%	145* (151) 4.5%	...	40* (32) 27.3%	185* (158) 4.7%
48	4223 (908) 28.7%	529* (243) 58.7%	18* (13) 52.4%	4770 (901) 30.5%	792* (581) 5.4%	166* (139) 18.5%	...	959* (598) 6.1%
49	6658 (1577) 81.0%	1862* (567) 100.0%	173* (99) 99.8%	8693 (1711) 84.8%	1352* (846) 16.5%	...	...	1352* (846) 13.2%
50	19834 (2073) 65.4%	1513* (460) 84.0%	...	21347 (2111) 66.4%	1237* (541) 4.1%	200* (116) 11.1%	...	1437* (558) 4.5%
51	4763 (1069) 52.3%	237* (237) 100.0%	...	5000 (1183) 53.5%	398* (410) 4.4%	...	...	398* (410) 4.3%
55	13252 (2395) 70.0%	91* (84) 14.7%	...	13343 (2415) 68.3%	...	...	...	...
72	11458 (1507) 55.5%	406* (148) 60.1%	13* (19) 100.0%	11877 (1535) 55.7%	357* (379) 1.7%	...	...	357* (379) 1.7%
73	7424 (1349) 44.8%	726* (185) 48.8%	299* (139) 87.8%	8449 (1383) 45.9%	380* (285) 2.3%	192* (119) 12.9%	6* (6) 1.7%	578* (312) 3.1%
75	21901 (3405) 83.7%	59* (60) 99.7%	...	21960 (3416) 83.7%	1312* (672) 5.0%	...	...	1312* (672) 5.0%
76	7031* (1784) 72.1%	123* (94) 100.0%	...	7154* (1832) 72.5%	293* (388) 3.0%	...	...	293* (388) 3.0%
80	2121* (661) 74.7%	1978 (241) 91.3%	1935 (297) 93.9%	6035 (640) 85.4%	...	87* (50) 4.0%	126* (38) 6.1%	212* (67) 3.0%
ALL	300443 (7087) 67.3%	40426 (1147) 81.6%	8181 (380) 86.8%	349050 (7039) 69.0%	32755 (3382) 7.3%	4321 (528) 8.7%	1003 (153) 10.6%	38079 (3310) 7.5%

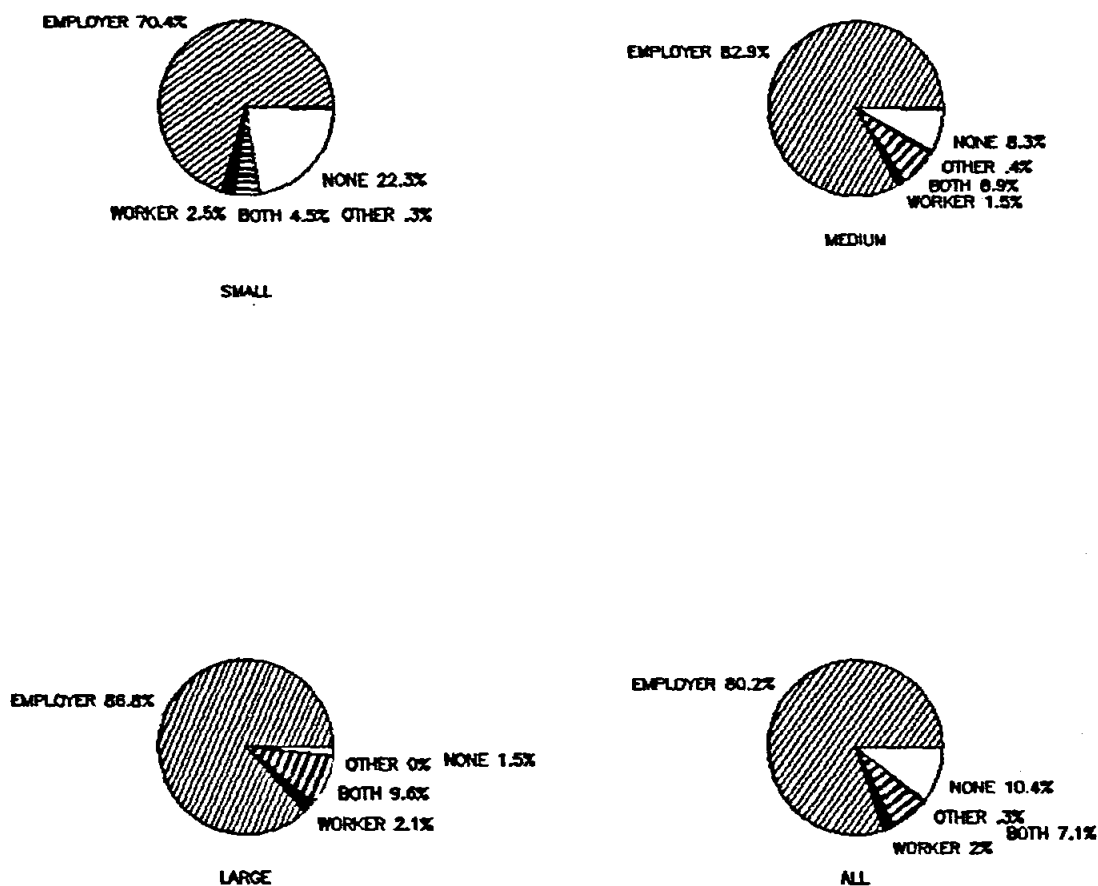
\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE IV - 85**  
**NUMBER OF PLANTS PROVIDING PERSONAL**  
**PROTECTIVE DEVICES TO WORKERS**  
**(NOES 1981-1983)**

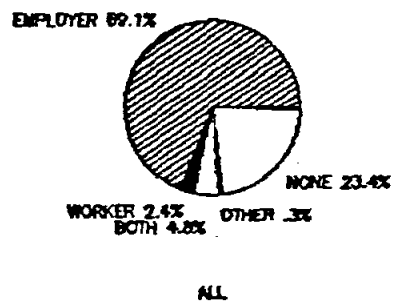
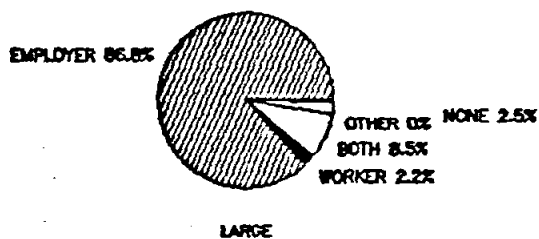
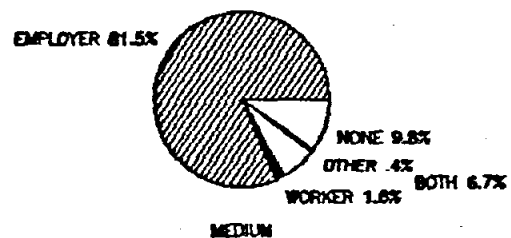
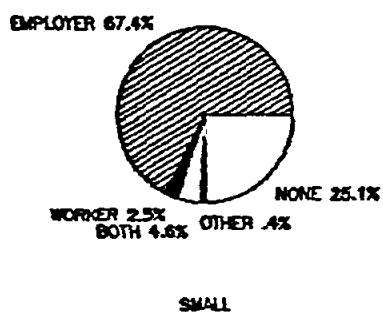




**FIGURE IV - 86**  
**SOURCE OF PROTECTIVE DEVICES BY**  
**PROPORTION OF WORKERS AND PLANT SIZE**  
**(NOES 1981-1983)**



**FIGURE IV - 87**  
**SOURCE OF PROTECTIVE DEVICES BY PROPORTION**  
**OF PLANTS AND PLANT SIZE**  
**(NOES 1981-1983)**



**NOES QUESTIONNAIRE ITEM NO. 49**  
**Responsibility for Maintenance of Personal Protective Devices**

**Intent**

The intent of this question was to determine formal responsibility for the proper maintenance of personal protective devices.

This item was displayed on the questionnaire as:

49. Who has been designated to see to it that personal protective devices and equipment are serviced and maintained?

- 1 individual employees
- 2 employer representative
- 3 both
- 4 no one
- 5 other Specify \_\_\_\_\_

**Notes**

Maintenance of personal protective devices refers to such activities as cleaning, changing respirator filters, repairing equipment straps, or filling air tanks.

Responsibility for maintenance was established by management policy. For example, if the employer formally assumed all responsibility, "employer representative" was coded, and if employees were directed to perform their own maintenance operations, "individual employees" was coded. "Both" was coded where management policy directed a sharing of maintenance tasks between employer representative and employees.

In the absence of any specific management directive, "no one" was coded, and management arrangements to have maintenance performed by unions, government units, or other sources was coded "other".

**Analysis**

Two analyses of the responses to question 49 are presented.

(1) Response 49.2 - Personal protective devices maintained by the employer

The estimated proportions of the workforce employed in plants where personal protective devices are maintained by their employer are displayed in Figures IV-88 and IV-89.

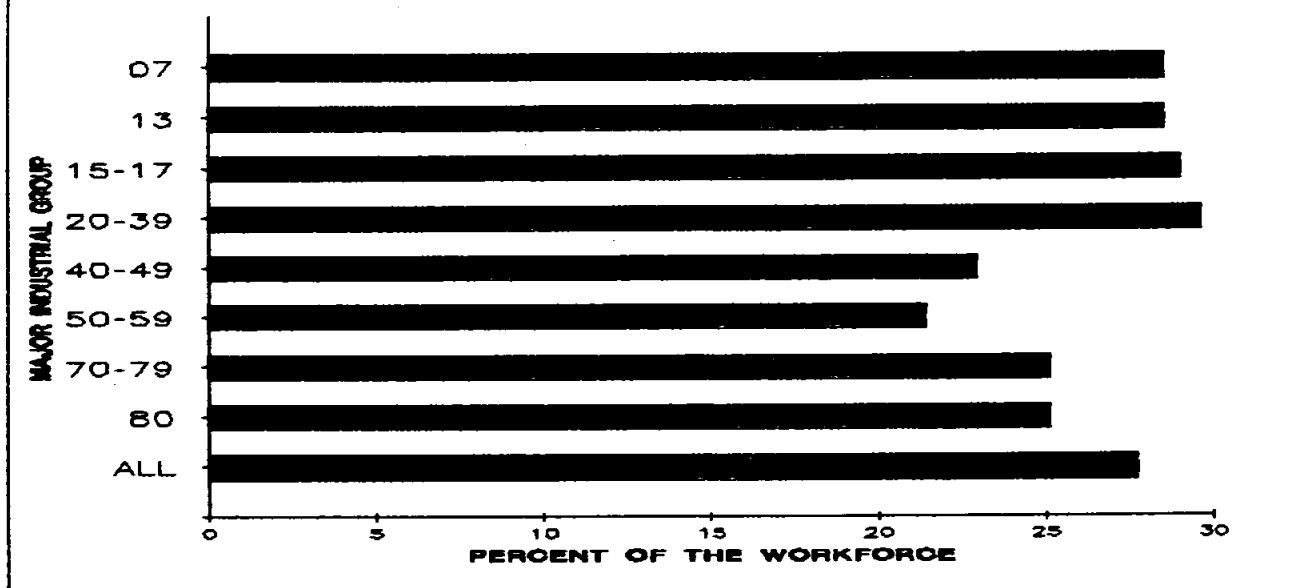
- |              |   |
|--------------|---|
| Figure IV-88 | Workers in plants where personal protective devices are maintained by the employer<br>(by major industrial group) |
| Figure IV-89 | Workers in plants where personal protective devices are maintained by the employer<br>(by 2-digit SIC)            |

- (2) Responses 49.1, 49.2, 49.3, 49.4, and 49.5 - Assigned responsibility for maintenance of personal protective devices.

Estimates of the number and proportion of plants, and employees in those plants, by categories of assigned responsibility for maintenance of personal protective gear are presented in Figures IV-90 and IV-91, and Tables IV-63 and IV-64.

Figure IV-90	Proportion of workers in plants with protective device policies by responsibility for maintenance.
Figure IV-91	Plants with protective device policies by assigned responsibility for maintenance
Table IV-63	Number and percent of plants in which personal protective devices are maintained by designated source of service (by major industrial group)
Table IV-64	Number and percent of plants in which personal protective devices are maintained by designated source of service (by 2-digit SIC)

**FIGURE IV - 88**  
**WORKERS IN PLANTS WHERE PERSONAL PROTECTIVE**  
**DEVICES ARE MAINTAINED BY THE EMPLOYER**  
**(NOES 1981-1983)**



NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-63

NUMBER AND PERCENT OF PLANTS IN WHICH PERSONAL PROTECTIVE  
 DEVICES ARE MAINTAINED BY DESIGNATED SOURCE OF SERVICE

MAJOR GROUP	WORKERS	EMPLOYER	WORKER & EMPLOYER	NONE	OTHER
07	263* (247) 4.7%	3808* (1046) 67.6%	1017* (673) 18.0%	230* (220) 4.1%	...
13	539* (341) 5.6%	5262 (1285) 54.5%	2280 (566) 23.6%	...	...
15-17	11769 (1539) 11.9%	57106 (2717) 57.8%	12919 (1678) 13.1%	3736* (1086) 3.8%	1557* (607) 1.6%
20-39	16731 (1646) 8.7%	103812 (3883) 54.3%	20491 (1539) 10.7%	8932 (1402) 4.7%	2989* (1097) 1.6%
40-49	4748 (978) 8.0%	22235 (2299) 37.4%	6439 (1601) 10.8%	1348* (573) 2.3%	1769* (650) 3.0%
50-59	6069 (1320) 9.9%	28391 (2691) 46.5%	2716* (765) 4.4%	3365* (1162) 5.5%	984* (780) 1.6%
70-79	8160* (2074) 10.8%	31654 (2984) 41.7%	8168 (1348) 10.8%	3136* (1185) 4.1%	861* (606) 1.1%
80	697* (275) 9.9%	4637 (627) 65.6%	756 (166) 10.7%	44* (92) .6%	114* (88) 1.6%
ALL	48978 (3512) 9.6%	256903 (6858) 50.5%	54785 (3309) 10.8%	20791 (2507) 4.1%	8275 (1726) 1.6%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

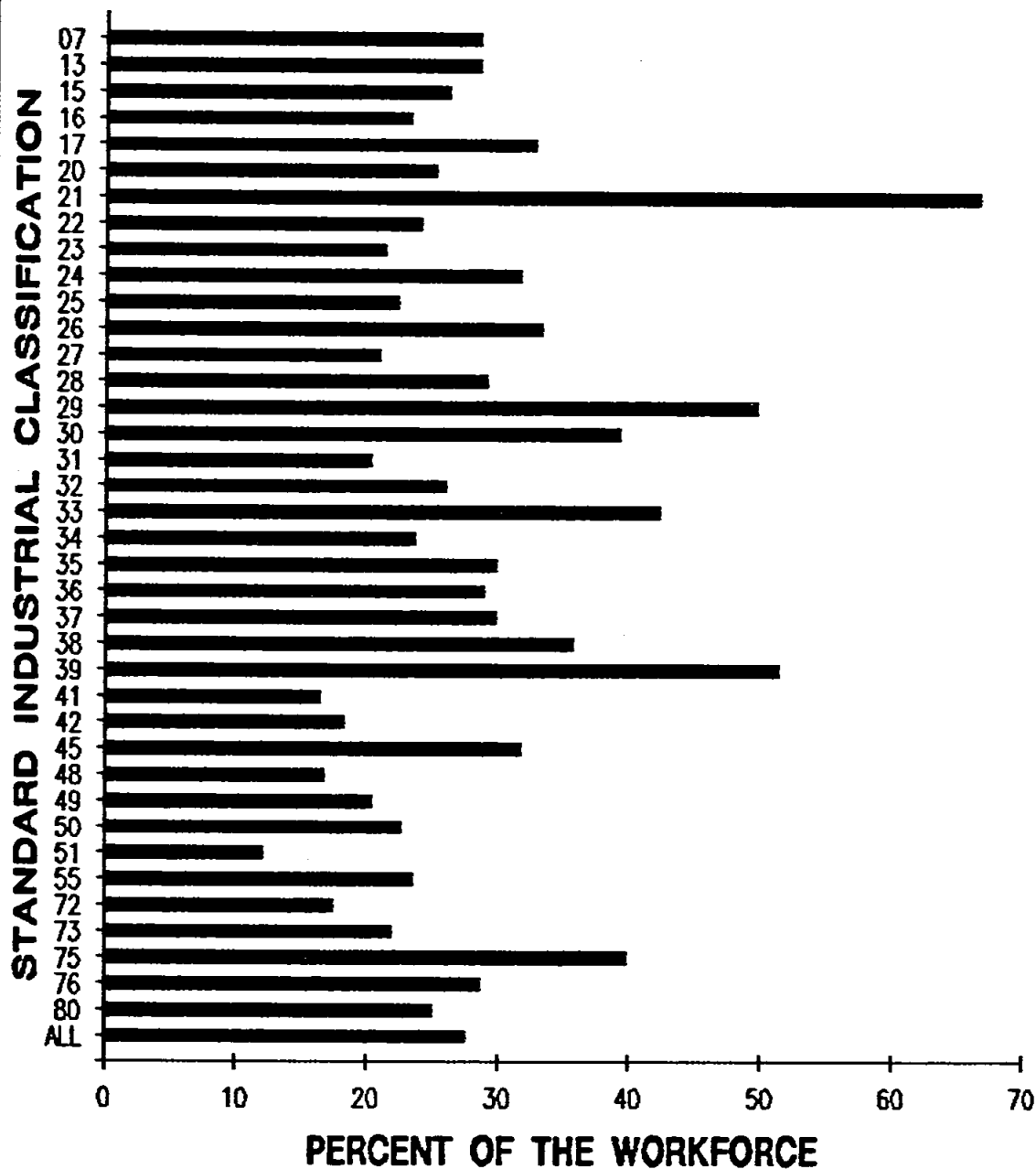
NUMBER AND PERCENT OF PLANTS IN WHICH PERSONAL PROTECTIVE  
DEVICES ARE MAINTAINED BY DESIGNATED SOURCE OF SERVICE

SIC CODE	WORKERS	EMPLOYER	WORKER & EMPLOYER	NONE	OTHER
07	263* (247) 4.7%	3808* (1046) 67.6%	1017* (673) 18.0%	230* (220) 4.1%	...
13	539* (341) 5.6%	5262 (1285) 54.5%	2280 (566) 23.6%	...	...
15	1875* (862) 7.2%	15543 (1733) 59.4%	4174 (877) 16.0%	1263* (494) 4.8%	522* (314) 2.0%
16	1108* (448) 8.9%	8618 (1286) 68.9%	1019* (338) 8.1%	156* (148) 1.2%	327* (117) 2.6%
17	8786 (1353) 14.6%	32945 (2280) 54.9%	7725 (1180) 12.9%	2318* (905) 3.9%	708* (462) 1.2%
20	871* (250) 5.7%	9148 (844) 60.2%	1228* (317) 8.1%	792* (335) 5.2%	251* (129) 1.7%
21	...	48* (60) 43.8%	61* (33) 56.2%	...	...
22	234* (156) 4.9%	2386 (323) 49.5%	370* (152) 7.7%	252* (183) 5.2%	227* (145) 4.7%
23	553* (221) 3.5%	2346 (536) 14.8%	714* (331) 4.5%	589* (306) 3.7%	323* (201) 2.0%
24	1324* (450) 11.1%	6165 (777) 51.5%	1288* (439) 10.8%	851* (297) 7.1%	513* (631) 4.3%
25	157* (94) 2.9%	3148 (529) 58.9%	935* (405) 17.5%	112* (100) 2.1%	...
26	764* (439) 13.0%	3288 (456) 55.8%	641* (390) 10.9%	213* (141) 3.6%	...
27	1333* (453) 6.6%	5594 (635) 27.5%	700* (362) 3.4%	1410* (620) 6.9%	156* (83) .8%
28	299* (139) 3.9%	5551 (374) 72.0%	846* (317) 11.0%	59* (55) .8%	181* (117) 2.3%
29	...	515* (230) 36.7%	728* (441) 51.8%	...	...
30	811* (395) 9.6%	5553 (1173) 65.6%	935* (248) 11.0%	218* (142) 2.6%	208* (178) 2.5%
31	24* (27) 1.6%	605* (250) 39.7%	180* (197) 11.8%	36* (55) 2.3%	...
32	734* (406) 7.3%	6606 (1115) 66.1%	906* (357) 9.1%	969* (490) 9.7%	135* (99) 1.4%
33	651* (376) 11.0%	3065 (485) 51.6%	1811* (579) 30.5%	253* (175) 4.3%	...

SIC CODE	WORKERS	EMPLOYER	WORKER & EMPLOYER	NONE	OTHER
34	2699* (766) 12.3%	15066 (980) 68.5%	3107 (753) 14.1%	587 (99) 2.7%	75* (67) .3%
35	3366 (781) 12.5%	18444 (1619) 68.7%	2149 (484) 8.0%	1091* (540) 4.1%	646* (405) 2.4%
36	1089* (395) 10.3%	6461 (673) 61.1%	1041* (274) 9.8%	424* (360) 4.0%	169* (121) 1.6%
37	813* (408) 14.6%	3494 (765) 62.6%	1111* (312) 19.9%	107* (71) 1.9%	54* (51) 1.0%
38	197* (133) 4.9%	3271 (629) 80.5%	289* (133) 7.1%	55* (66) 1.4%	...
39	812* (374) 10.6%	3057* (1088) 39.8%	1449* (389) 18.8%	915* (402) 11.9%	50* (185) .7%
41	192* (218) 3.9%	2120* (738) 43.0%	57* (47) 1.2%	223* (153) 4.7%	268* (223) 5.4%
42	2554* (816) 11.8%	6940 (1217) 32.1%	1394* (659) 6.5%	1031* (527) 4.8%	346* (238) 1.6%
45	855* (429) 21.5%	1463* (640) 36.8%	562* (430) 14.1%	84* (111) 2.1%	...
48	540* (410) 3.5%	4258 (873) 27.2%	764* (497) 4.9%	...	166* (139) 1.1%
49	549* (293) 5.4%	6505 (1288) 63.5%	2411* (982) 23.5%	...	580* (478) 5.7%
50	3683 (745) 11.5%	15890 (1965) 49.4%	1765* (570) 5.5%	1445* (697) 4.5%	...
51	259* (220) 2.8%	3688 (857) 39.4%	...	738* (518) 7.9%	714* (728) 7.6%
55	2127* (905) 10.9%	8812 (1877) 45.1%	951* (484) 4.9%	1182* (582) 6.0%	271* (260) 1.4%
72	1959* (1005) 9.2%	7744 (1349) 36.3%	1829* (1014) 8.6%	398* (333) 1.9%	304* (352) 1.4%
73	366* (269) 2.0%	6987 (1151) 38.0%	1451* (602) 7.9%	121* (129) .7%	103* (58) .6%
75	4121* (1272) 15.7%	12455 (1948) 47.5%	3624* (1383) 13.8%	2618* (1030) 10.0%	455* (438) 1.7%
76	1714* (843) 17.4%	4468* (1758) 45.3%	1265* (748) 12.8%	...	...
80	697* (275) 9.9%	4637 (627) 65.6%	756 (166) 10.7%	44* (92) .6%	114* (88) 1.6%
ALL	48935 (3300) 9.7%	255975 (9315) 50.6%	53560 (4322) 10.6%	20791 (2805) 4.1%	7867* (2059) 1.6%

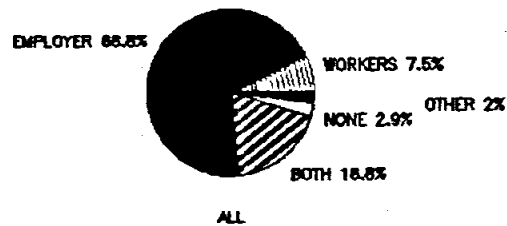
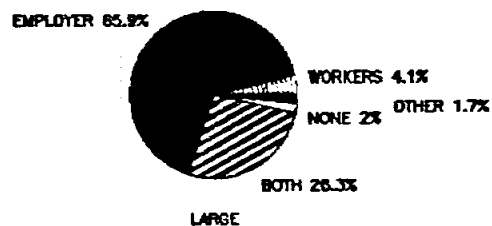
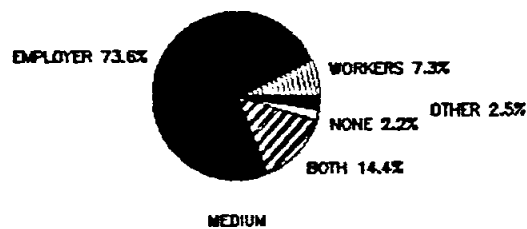
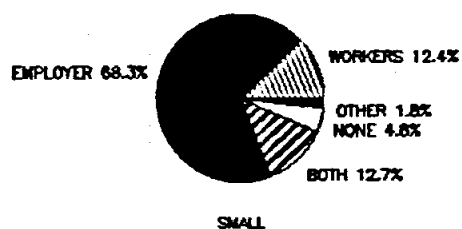
\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE IV - 89**  
**WORKERS IN PLANTS WHERE PERSONAL PROTECTIVE**  
**DEVICES ARE MAINTAINED BY THE EMPLOYER**  
**(NOES 1981-1983)**

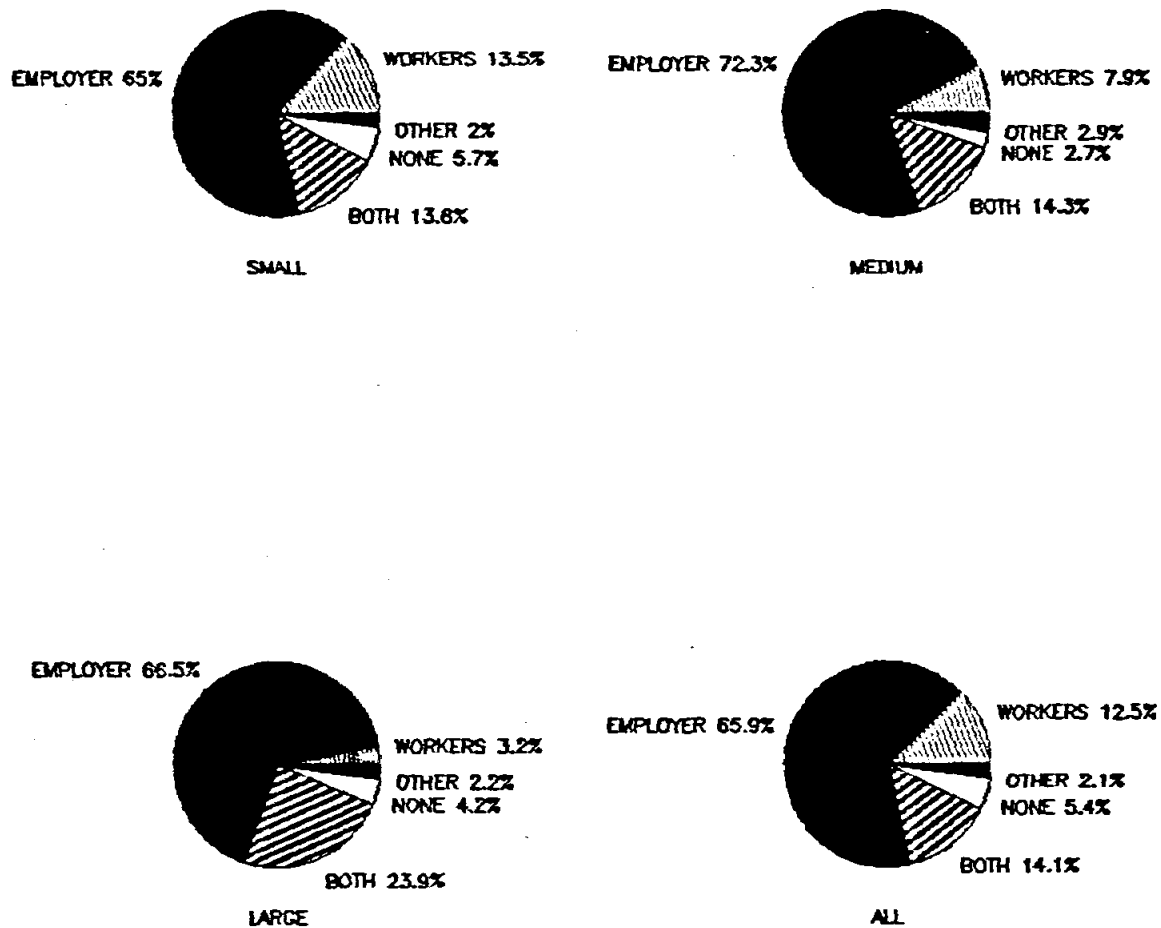




**FIGURE IV – 90**  
**PROPORTION OF WORKERS IN PLANTS WITH PROTECTIVE**  
**DEVICE POLICIES BY RESPONSIBILITY FOR MAINTENANCE**  
**(NOES 1981-1983)**



**FIGURE IV - 91**  
**PLANTS WITH PROTECTIVE DEVICE POLICIES**  
**BY ASSIGNED RESPONSIBILITY FOR MAINTENANCE**  
**(NOES 1981-1983)**



**NOES QUESTIONNAIRE ITEM NO. 50**

The intent of this question was to determine if the employer had a functioning system of corrective actions for improper use, or failure to use personal protective devices or clothing.

50. In those instances where employees refuse to wear protective devices or fail to wear them properly, are corrective measures taken?

- 1**

Corrective measures were considered to be formal actions by plant management against individuals who refused to use protective devices, or who wore them improperly. These measures included personnel actions (transfer, removal, suspension, dismissal, etc.) and fines imposed by management. Informal actions such as verbal notification of error, or labor union sanctions against the offending worker(s) were not regarded as corrective measures.

### Analysis

**Response 50.1 - Corrective measures taken to enforce proper use of protective devices**

**Figure IV-92**      **Workers in plants which take corrective action to enforce proper use of protective devices**  
**(by major industrial group)**

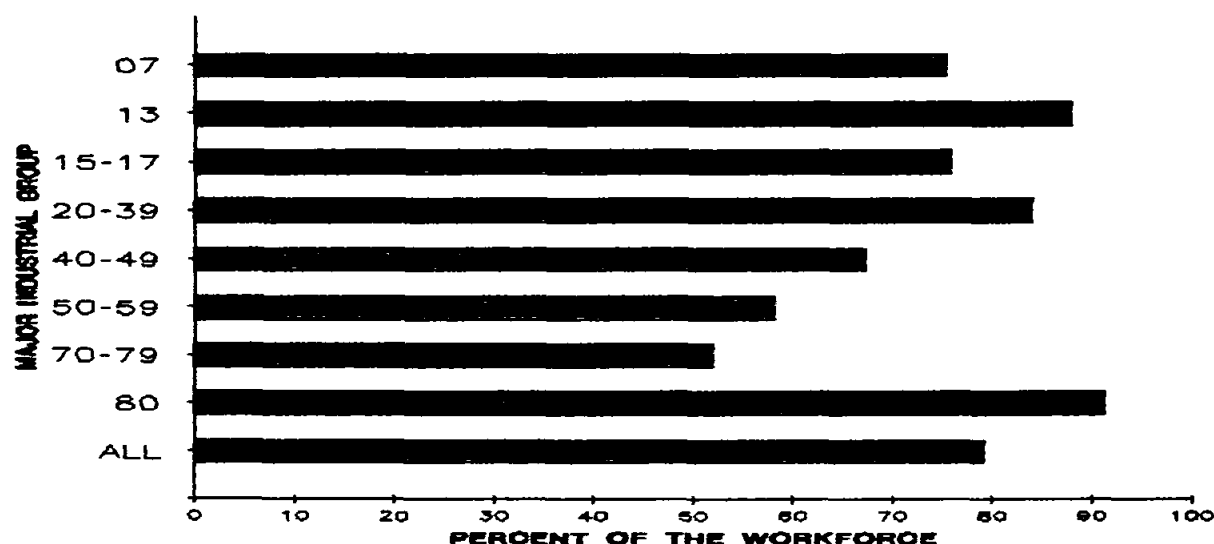
**Figure IV-93**      **Workers in plants which take corrective action to enforce proper use of protective devices (by 2-digit SIC)**

**Figure IV-94**      **Plants which take corrective action to enforce proper use of protective devices**  
**(by major industrial group)**

**Figure IV-95**      **Plants which take corrective action to enforce proper use of protective devices**  
**(by 2-digit SIC)**

<b>Figure IV-96</b>	<b>Proportion of workers in plants which take action for improper use of protective devices</b>
<b>Figure IV-97</b>	<b>Proportion of plants which take action for improper use of protective devices</b>
<b>Table IV-65</b>	<b>Number and percent of plants and employees in plants which take corrective measures if workers use protective devices improperly (by major industrial group)</b>
<b>Table IV-66</b>	<b>Number and percent of plants and employees in plants which take corrective measures if workers use protective devices improperly (by 2-digit SIC)</b>

**FIGURE IV - 92**  
**WORKERS IN PLANTS WHICH TAKE CORRECTIVE ACTION**  
**TO ENFORCE PROPER USE OF PROTECTIVE DEVICES**  
**(NOES 1981-1983)**



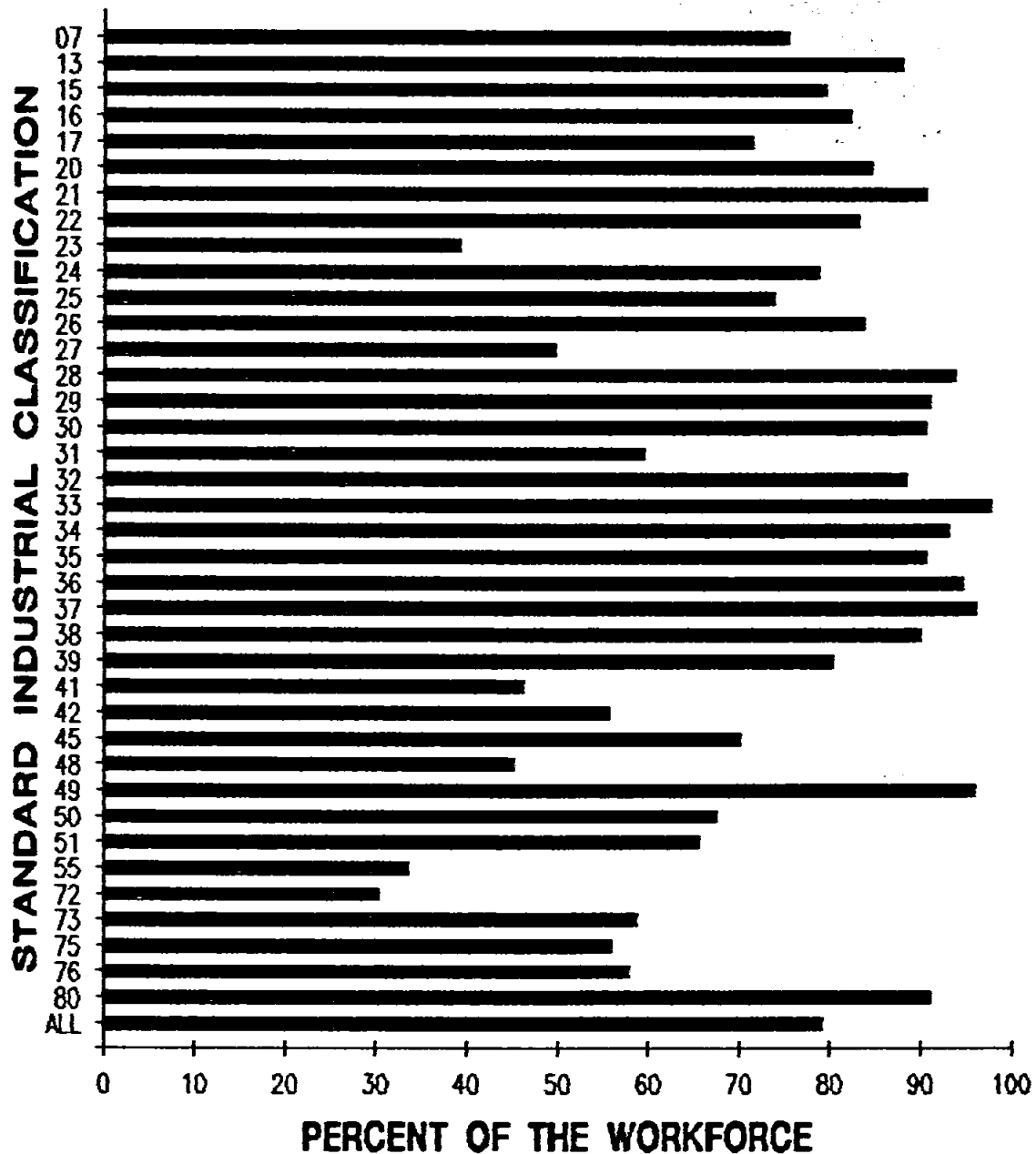
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-65

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH TAKE  
 CORRECTIVE MEASURES IF WORKERS USE PROTECTIVE DEVICES IMPROPERLY

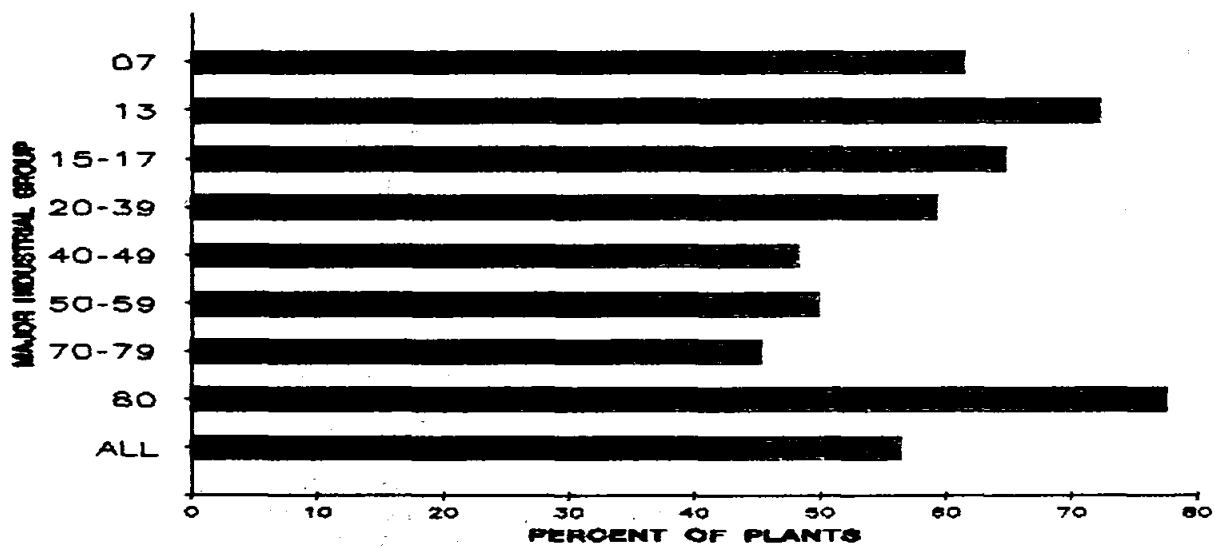
MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	3397* (1144) 61.1%	70* (67) 100.0%	...	3468* (1131) 61.6%	76663* (27525) 73.9%	7009* (6680) 100.0%	...	83672* (26336) 75.6%
13	5932 (1204) 69.0%	1019* (331) 100.0%	46* (52) 100.0%	6996 (1348) 72.4%	159471 (24977) 76.3%	173943* (58021) 100.0%	31383* (35291) 100.0%	364796 (88496) 88.1%
15-17	60308 (2517) 63.9%	3538 (410) 85.4%	220* (131) 90.9%	64066 (2363) 64.9%	1479677 (62179) 70.5%	647212 (87652) 87.8%	207866* (98220) 88.1%	2334754 (124301) 76.0%
20-39	81179 (3455) 53.0%	26569 (1694) 83.7%	5925 (203) 94.5%	113673 (4278) 59.4%	2759414 (68211) 59.8%	5445915 (332511) 85.3%	8010827 (253578) 96.9%	16216156 (496218) 84.2%
40-49	23773 (2559) 44.7%	4587 (1011) 78.5%	410* (123) 87.5%	28770 (2699) 48.4%	752350 (90968) 52.5%	945762 (222785) 82.0%	439678 (101099) 76.6%	2137790 (272874) 67.6%
50-59	28648 (2849) 49.1%	1861* (509) 70.0%	...	30510 (2959) 50.0%	622703 (69201) 55.4%	272924* (74045) 66.8%	...	895627 (112963) 58.4%
70-79	33043 (3661) 45.2%	1169 (196) 49.8%	291* (139) 82.1%	34503 (3569) 45.5%	598101 (61627) 42.9%	261515 (44213) 56.3%	287464* (116266) 84.7%	1147080 (114683) 52.2%
80	1823* (636) 64.2%	1742 (246) 80.4%	1926 (279) 93.4%	5491 (617) 77.7%	72540* (20146) 71.4%	449183 (71966) 84.0%	2822890 (352024) 93.4%	3344612 (346937) 91.4%
ALL	238104 (7036) 53.0%	40555 (2129) 81.1%	8817 (416) 93.4%	287476 (7493) 56.5%	6520918 (164828) 58.9%	8203463 (428844) 83.2%	11800107 (472074) 94.6%	26524488 (700676) 79.4%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE IV - 93**  
**WORKERS IN PLANTS WHICH TAKE CORRECTIVE ACTION**  
**TO ENFORCE PROPER USE OF PROTECTIVE DEVICES**  
**(NOES 1981-1983)**



**FIGURE IV - 94**  
**PLANTS WHICH TAKE CORRECTIVE ACTION TO**  
**ENFORCE PROPER USE OF PROTECTIVE DEVICES**  
**(NOES 1981-1983)**



NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH TAKE  
CORRECTIVE MEASURES IF WORKERS USE PROTECTIVE DEVICES IMPROPERLY

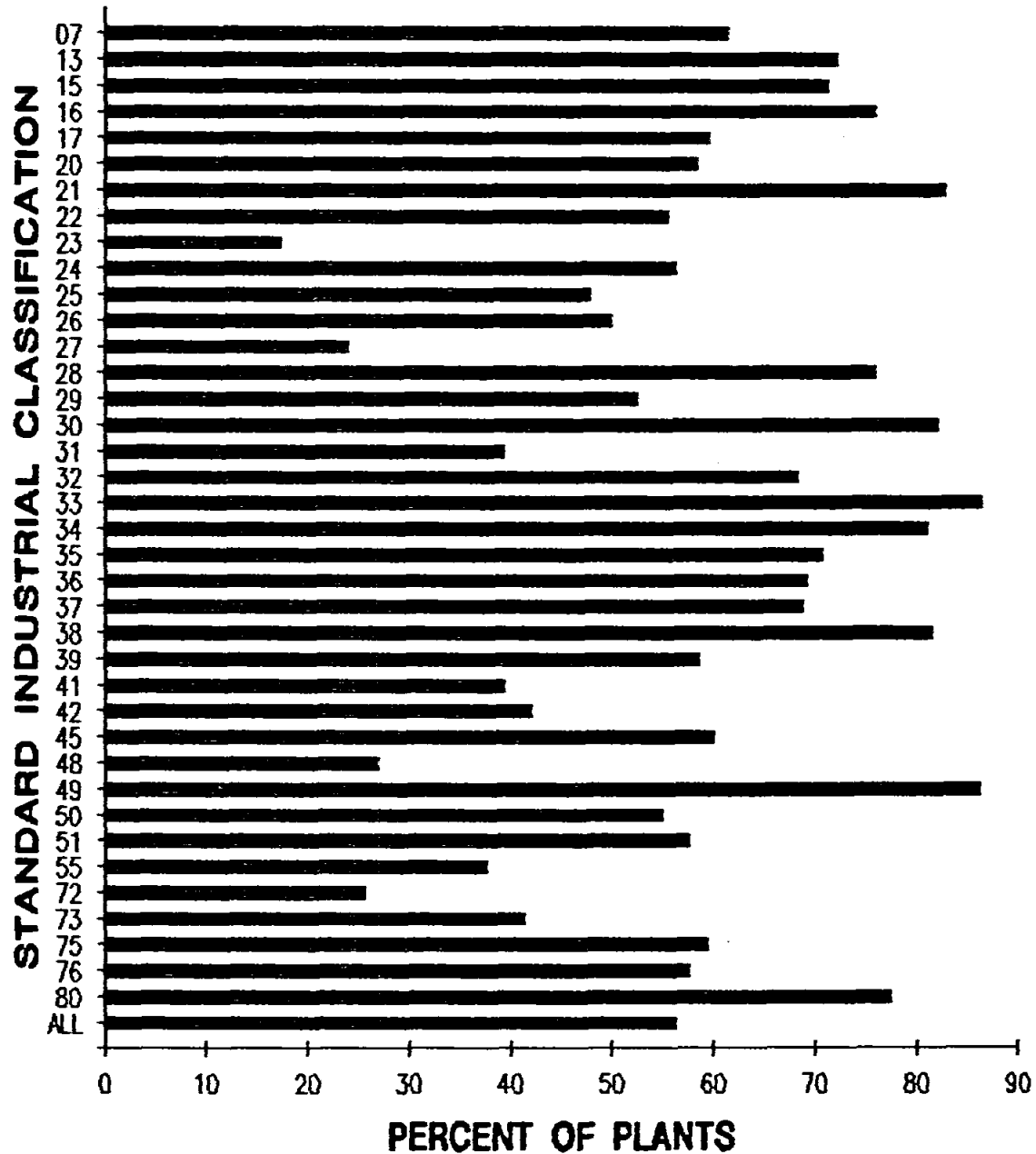
SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	3397* (1144) 61.1%	70* (67) 100.0%	...	3468* (1131) 61.6%	76663* (27525) 61.6%	7009* (6680) 100.0%	...	83672* (26336) 75.6%
13	5932 (1204) 69.0%	1019* (331) 100.0%	46* (52) 100.0%	6996 (1348) 72.4%	159471 (24977) 76.3%	173943* (58021) 100.0%	31383* (35291) 100.0%	364796 (88496) 88.1%
15	17631 (1552) 70.8%	934 (154) 84.4%	130* (98) 96.4%	18695 (1587) 71.5%	421745 (41663) 74.9%	173057 (35900) 87.3%	118577* (67614) 88.0%	713379 (93223) 79.6%
16	8484 (1397) 75.2%	952 (184) 85.1%	90* (66) 84.0%	9526 (1396) 76.1%	215214 (43928) 75.8%	184114 (42377) 88.6%	89288* (54040) 88.2%	488617 (78158) 82.4%
17	34193 (2163) 58.8%	1652 (379) 86.1%	...	35844 (2086) 59.7%	842718 (46721) 67.3%	290041* (74363) 87.6%	...	1132759 (74003) 71.6%
20	5499 (633) 48.2%	2830 (444) 88.0%	559 (121) 100.0%	8888 (790) 58.5%	210622 (20449) 54.2%	614181 (103816) 91.2%	491775 (104930) 100.0%	1316578 (113217) 84.7%
21	30* (43) 100.0%	...	60* (38) 76.1%	90* (50) 83.0%	1866* (2685) 100.0%	...	101476* (68062) 90.5%	103342* (67354) 90.7%
22	1175 (283) 40.1%	1210 (193) 76.2%	299* (80) 99.9%	2684 (392) 55.7%	50305* (14029) 47.4%	283804 (37212) 81.8%	261093* (94186) 100.0%	595201 (84282) 83.3%
23	1353* (482) 10.8%	1259 (181) 40.6%	169* (79) 69.9%	2782 (593) 17.5%	48581* (14966) 11.5%	276261 (38798) 45.3%	164313* (73101) 78.8%	489155 (90955) 39.4%
24	5558 (865) 51.9%	1082 (136) 94.2%	104* (74) 100.0%	6744 (849) 56.4%	190569 (27968) 62.8%	174437 (24113) 95.0%	92355* (52501) 100.0%	457361 (79781) 78.9%
25	1674* (425) 40.2%	773* (204) 72.8%	119* (75) 99.6%	2566 (513) 48.0%	59134 (14112) 42.5%	201403* (51827) 78.5%	122998* (62394) 100.0%	383534 (86115) 74.0%
26	1441 (259) 35.0%	1296 (254) 82.6%	214* (73) 100.0%	2951 (350) 50.1%	83023 (12383) 60.3%	235342 (50213) 83.6%	206864* (65220) 100.0%	525229 (93079) 83.9%
27	3509 (702) 19.4%	1161 (138) 62.0%	231* (87) 73.2%	4901 (693) 24.1%	121210 (20570) 25.4%	214101 (34252) 59.3%	255969* (66015) 74.0%	591279 (75628) 49.9%
28	4416 (502) 71.5%	1073 (113) 92.5%	380 (63) 100.0%	5868 (495) 76.1%	145528 (8516) 80.5%	239827 (34389) 91.9%	476341 (101388) 100.0%	861695 (118019) 93.9%
29	345* (232) 34.2%	293* (125) 100.0%	101* (42) 100.0%	740* (292) 52.7%	21404* (13620) 52.2%	63255* (21394) 100.0%	117545* (70259) 100.0%	202204* (80174) 91.2%
30	5285 (1054) 78.8%	1503* (387) 97.8%	180* (67) 80.3%	6968 (1221) 82.3%	185096 (26899) 82.3%	290201* (82179) 98.5%	208455* (70884) 89.2%	683752 (109498) 90.8%
31	223* (195) 24.0%	353* (96) 62.0%	25* (24) 100.0%	602* (231) 39.5%	5587* (4876) 22.5%	83836* (24931) 61.9%	15664* (16901) 100.0%	105087* (30759) 59.7%
32	5679 (1013) 64.5%	973 (146) 96.2%	184* (71) 99.9%	6836 (1061) 68.4%	175399 (13730) 74.0%	204667 (32074) 97.9%	128993* (49687) 100.0%	509060 (46950) 88.5%
33	3340 (525) 80.8%	1468 (138) 100.0%	337 (62) 100.0%	5145 (564) 86.6%	116347 (11231) 84.0%	311081 (30513) 100.0%	621499 (82456) 100.0%	1048927 (87795) 97.9%



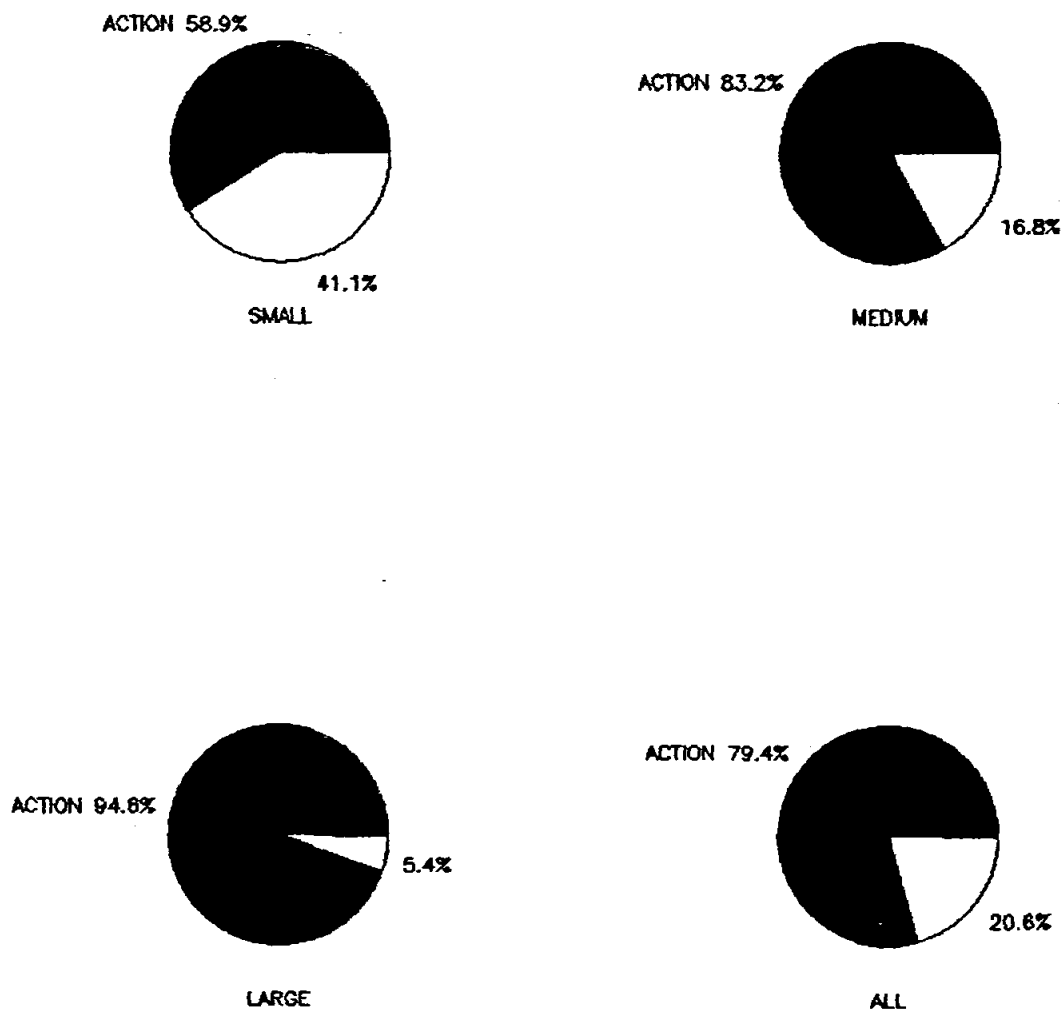
SIC CODE					EMPLOYEES			
	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	14454 (1190) 78.0%	3056 (143) 97.9%	346 (83) 99.9%	17855 (1149) 81.2%	464504 (20010) 83.7%	585123 (24701) 98.1%	351056* (100266) 100.0%	1400683 (103578) 93.2%
35	15079 (1316) 66.6%	3190 (127) 93.7%	763 (79) 97.3%	19031 (1309) 70.9%	453035 (21931) 74.7%	618278 (17177) 93.5%	1090665 (144646) 98.0%	2161979 (142369) 90.8%
36	4092 (640) 57.6%	2468 (94) 91.9%	765 (169) 97.2%	7326 (666) 69.3%	170932 (18274) 74.2%	525565 (8247) 95.1%	1166735 (196541) 98.7%	1863232 (193046) 94.8%
37	2329 (511) 58.6%	1131 (99) 95.0%	390 (86) 93.7%	3850 (479) 69.0%	79444 (19416) 62.5%	232285 (27642) 97.1%	1499093 (246938) 99.0%	1810823 (244189) 96.3%
38	2116* (570) 78.7%	847 (100) 88.5%	361* (126) 86.7%	3323 (571) 81.8%	85460 (13596) 81.7%	170412 (23114) 87.7%	428568* (127647) 93.1%	684440 (137668) 90.1%
39	3582 (524) 54.7%	602* (1117) 75.5%	338* (216) 100.0%	4522* (1332) 58.8%	91369 (14196) 55.1%	121857* (227380) 81.5%	209369* (120490) 100.0%	422595* (208342) 80.5%
41	1697* (622) 38.4%	252* (136) 49.4%	...	1949* (685) 39.5%	57859* (20323) 49.2%	34499* (18593) 42.3%	...	92357* (32873) 46.4%
42	8250 (1372) 41.2%	775* (214) 52.3%	79* (54) 96.1%	9104 (1372) 42.2%	235622 (44773) 48.3%	150844* (41380) 58.3%	72864* (49190) 97.4%	459330 (62174) 55.9%
45	1699* (761) 52.4%	590* (397) 99.9%	108* (53) 73.2%	2396* (805) 60.2%	51939* (26200) 67.0%	109332* (75829) 100.0%	155960* (61157) 59.0%	317230* (98972) 70.3%
48	3522 (857) 24.0%	696 (165) 77.1%	18* (13) 52.4%	4235 (826) 27.1%	121977* (49808) 28.6%	136677* (38648) 77.5%	46280* (33466) 66.0%	304934 (62678) 45.4%
49	6822* (1760) 83.0%	1862* (567) 100.0%	173* (99) 99.8%	8856 (1962) 86.4%	237003 (58325) 88.0%	425470* (151076) 100.0%	146565* (65566) 100.0%	809038 (187353) 96.2%
50	16177 (1758) 53.3%	1533* (422) 85.1%	...	17710 (1871) 55.1%	383856 (55069) 60.9%	234499* (69502) 82.8%	...	618355 (103058) 67.7%
51	5161 (1163) 56.6%	237* (237) 100.0%	...	5398 (1263) 57.7%	112486* (32381) 60.8%	27013* (27013) 100.0%	...	139498* (48904) 65.8%
55	7311 (1572) 38.6%	91* (84) 14.7%	...	7402 (1603) 37.9%	126361* (32432) 40.9%	11413* (10448) 11.6%	...	137774* (37571) 33.8%
72	5192 (1266) 25.2%	299* (130) 44.3%	13* (19) 100.0%	5504 (1281) 25.8%	92968* (27214) 24.5%	40523* (18150) 49.3%	10670* (15114) 100.0%	144162* (40443) 30.5%
73	6599 (1355) 39.8%	775 (180) 52.0%	277* (131) 81.3%	7651 (1365) 41.6%	171310 (34158) 40.6%	200081 (43952) 57.2%	276793* (111017) 84.2%	648184 (116228) 58.9%
75	15586 (3027) 59.5%	59* (60) 99.7%	...	15645 (3034) 59.6%	228644 (42452) 55.3%	8238* (8380) 100.0%	...	236882 (43801) 56.2%
76	5667* (1466) 58.1%	36* (45) 29.4%	...	5703* (1487) 57.8%	105179 (23913) 58.9%	12672* (15755) 52.1%	...	117852* (32671) 58.1%
80	1823* (636) 64.2%	1742 (246) 80.4%	1926 (279) 93.4%	5491 (617) 77.7%	72540* (20146) 71.4%	449183 (71966) 84.0%	2822890 (352024) 93.4%	3344612 (346937) 91.4%
ALL	236320 (8959) 52.9%	40190 (954) 81.1%	8801 (351) 93.4%	285311 (9052) 56.4%	6472968 (171465) 58.7%	8130129 (140406) 83.2%	11791101 (485304) 94.6%	26394199 (546525) 79.4%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

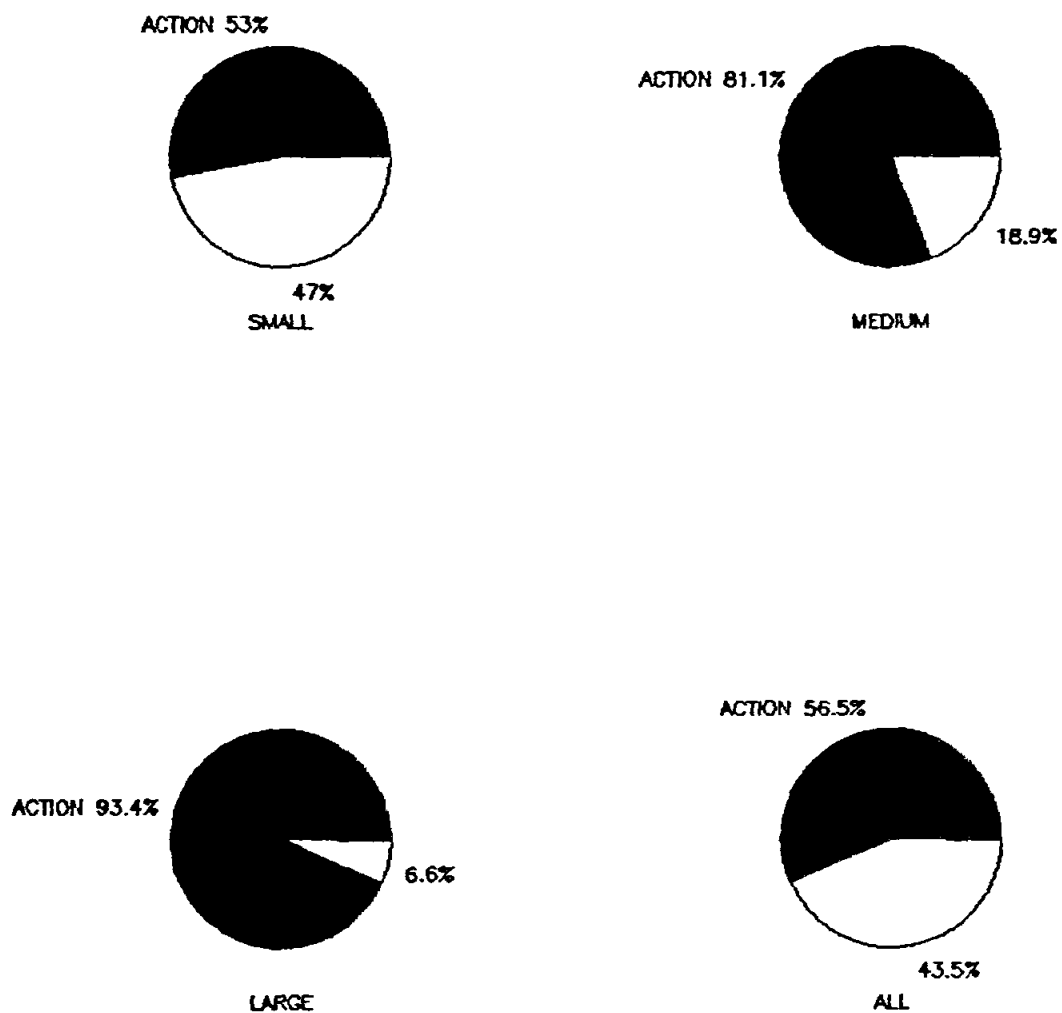
**FIGURE IV - 95**  
**PLANTS WHICH TAKE CORRECTIVE ACTION TO**  
**ENFORCE PROPER USE OF PROTECTIVE DEVICES**  
**(NOES 1981-1983)**



**FIGURE IV - 96**  
**PROPORTION OF WORKERS IN PLANTS WHICH TAKE**  
**ACTION FOR IMPROPER USE OF PROTECTIVE DEVICES**  
**(NOES 1981-1983)**



**FIGURE IV - 97**  
**PROPORTION OF PLANTS WHICH TAKE ACTION**  
**FOR IMPROPER USE OF PROTECTIVE DEVICES**  
**(NOES 1981-1983)**



**NOES QUESTIONNAIRE ITEM NO. 51**  
**Corrective Measures to Enforce Proper Use of Protective**  
**Gear Which Involve Economic Penalties**

**Intent**

The intent of this question was to determine to what extent workers were penalized by economic penalties for failure to comply with facility guidelines for the proper use of personal protective devices and equipment.

This item was displayed on the questionnaire as:

51. Do those corrective measures involve economic penalties?

- 1 Yes
- 2 No (Skip to Question 53)

**Notes**

This question was asked only if the interviewer received a positive response to the previous question regarding use of corrective measures.

Economic penalties were considered to be disciplinary actions taken by management which resulted in a financial loss to the affected worker. Examples of such actions are fines, dismissal, work hour reduction, suspension, or loss of seniority.

Actions not taken by management, such as union-sponsored sanctions, were regarded as a negative response.

Costs incurred by a worker, such as medical bills, as a consequence of failure to use protective gear properly, were not regarded as economic penalties.

**Analysis**

One analysis of the responses to question 51 is presented.

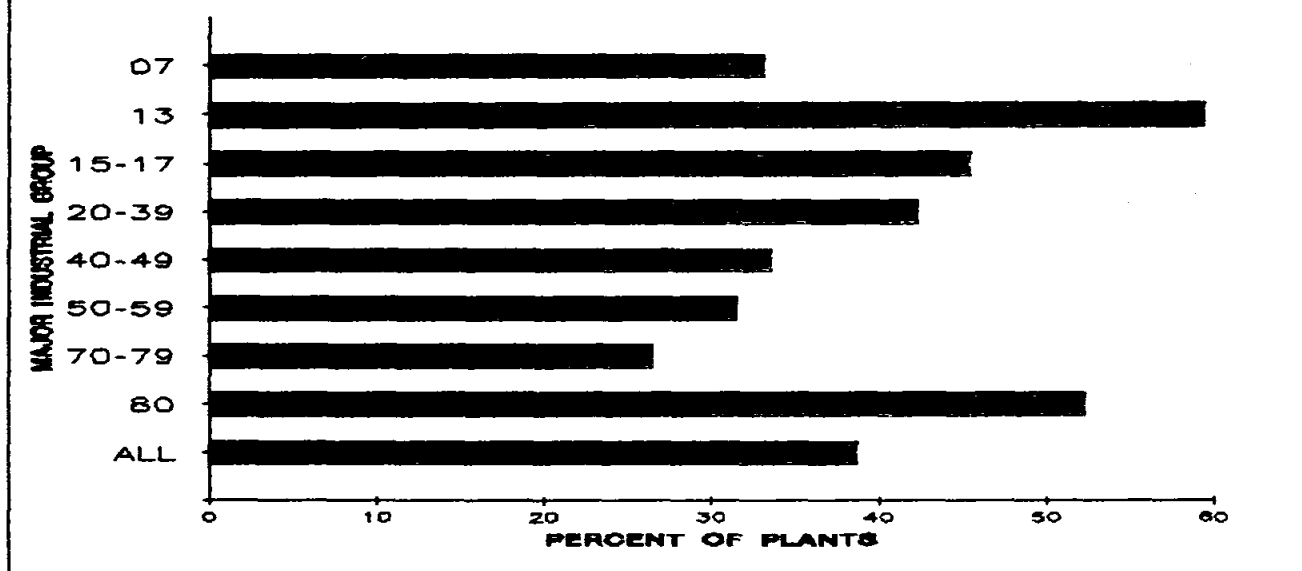
**Response 51.1 - Corrective measures involve economic penalties**

The estimates of the plants which impose economic penalties to enforce the proper use of personal protective devices, and workers in those plants (by number and proportion of the total) are displayed in Figures IV-98, IV-99, IV-100, and IV-101, and Tables IV-67 and IV-68.

- |                     |  |
|---------------------|--|
| <b>Figure IV-98</b> | Proportion of plants which include economic penalties in their corrective measures to enforce protective device use<br>(by major industrial group) |
| <b>Figure IV-99</b> | Proportion of plants which include economic penalties in their corrective measures to enforce protective device use<br>(by 2-digit SIC)            |

<b>Figure IV-100</b>	<b>Proportion of workers in plants which enforce protective device use with economic penalties</b>
<b>Figure IV-101</b>	<b>Proportion of plants which enforce protective device use with economic penalties</b>
<b>Table IV-67</b>	<b>Number and percent of plants and employees in plants which enforce protective device use with economic penalties (by major industrial group)</b>
<b>Table IV-68</b>	<b>Number and percent of plants and employees in plants which enforce protective device use with economic penalties (by 2-digit SIC)</b>

**FIGURE IV - 98**  
**PROPORTION OF PLANTS WHICH USE ECONOMIC**  
**PENALTIES TO ENFORCE PROTECTIVE DEVICE USE**  
**(NOES 1981-1983)**



NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-67

**NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH**  
**ENFORCE PROTECTIVE DEVICE USE WITH ECONOMIC PENALTIES**

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	1806* (704) 32.5%	70* (67) 100.0%	...	1876* (690) 33.3%	41740* (16978) 40.3%	7009* (6680) 100.0%	...	48749* (16019) 44.0%
13	4747 (1147) 55.2%	961* (323) 94.3%	46* (52) 100.0%	5754 (1358) 59.6%	129336 (25601) 61.9%	163920* (56580) 94.2%	31383* (35291) 100.0%	324638* (91328) 78.4%
15-17	42022 (2559) 44.5%	2751 (319) 66.4%	220* (131) 90.9%	44993 (2444) 45.6%	1075485 (71635) 51.2%	500803 (69435) 67.9%	207866* (98220) 88.1%	1784153 (122092) 58.1%
20-39	53465 (2885) 34.9%	22633 (1455) 71.3%	5226 (244) 83.3%	81323 (3639) 42.5%	1984946 (59102) 43.0%	4625245 (297784) 72.5%	6905321 (384588) 83.5%	13515512 (604732) 70.2%
40-49	15759 (2337) 29.6%	3979 (897) 68.1%	308* (105) 65.7%	20046 (2470) 33.7%	566337 (79629) 39.5%	852154 (206417) 73.9%	348680* (87725) 60.8%	1767172 (253003) 55.9%
50-59	17761 (2897) 30.4%	1509* (391) 56.7%	...	19270 (2805) 31.6%	416315 (66124) 37.0%	232782* (63454) 56.9%	...	649097 (89310) 42.3%
70-79	18957 (2789) 25.9%	988 (209) 42.1%	221* (126) 62.6%	20166 (2763) 26.6%	352946 (52073) 25.3%	214705 (39555) 46.2%	217062* (99894) 63.9%	784713 (106486) 35.7%
80	751* (281) 26.4%	1342 (247) 62.0%	1617 (274) 78.5%	3710 (443) 52.5%	36251* (12003) 35.7%	348994 (74508) 65.3%	2337331 (349954) 77.3%	2722577 (342436) 74.4%
ALL	155267 (6196) 34.6%	34232 (1841) 68.5%	7638 (426) 80.9%	197137 (6583) 38.8%	4603356 (152109) 41.5%	6945612 (387934) 70.4%	10047643 (546756) 80.6%	21596611 (767980) 64.6%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-68

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
ENFORCE PROTECTIVE DEVICE USE WITH ECONOMIC PENALTIES

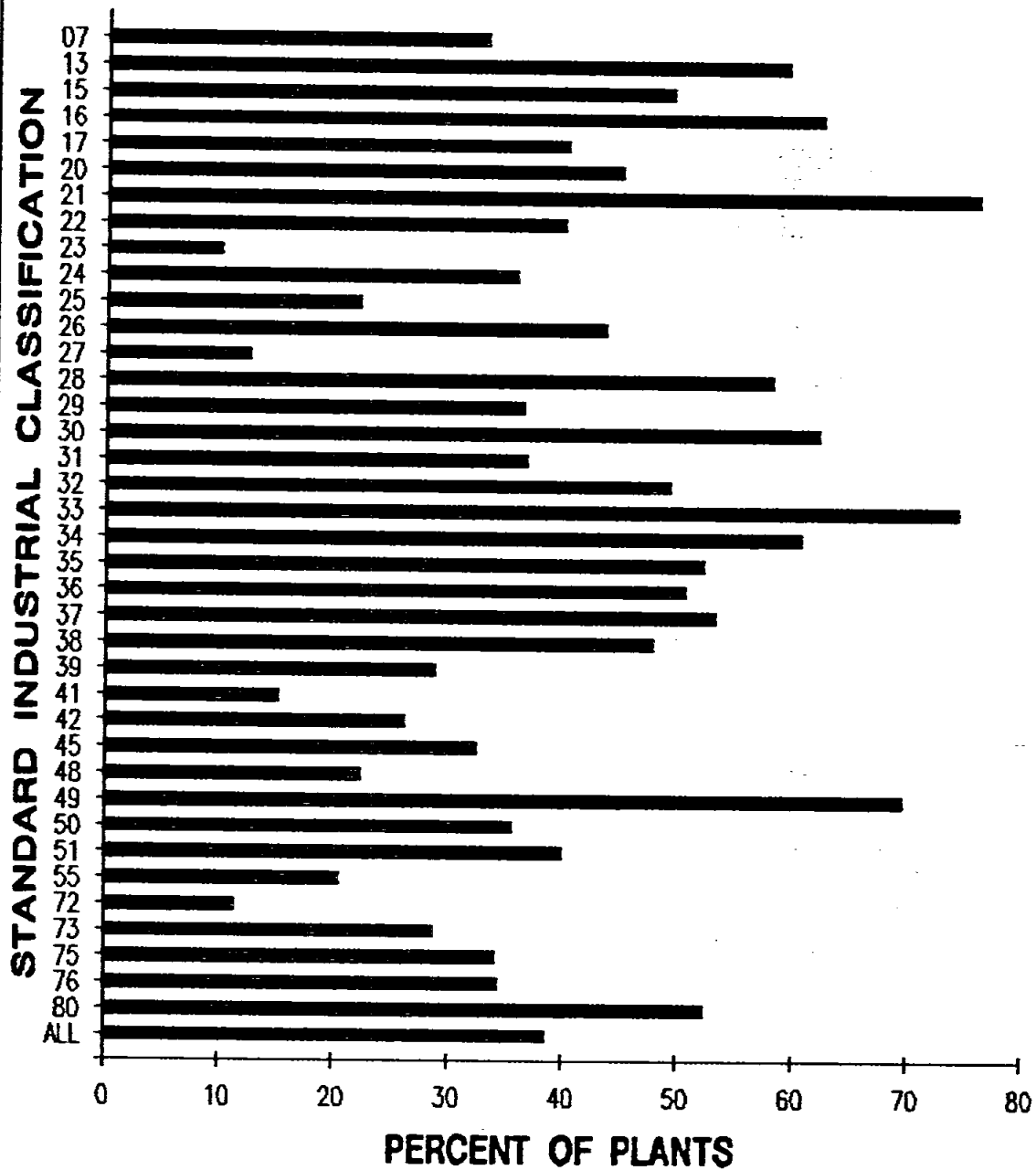
SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	1806* (704) 32.5%	70* (67) 100.0%	...	1876* (690) 33.3%	41740* (16978) 40.3%	7009* (6680) 100.0%	...	48749* (16019) 44.0%
13	4747 (1147) 55.2%	961* (323) 94.3%	46* (52) 100.0%	5754 (1358) 59.6%	129336 (25601) 61.9%	163920* (56580) 94.2%	31383* (35291) 100.0%	324638* (91328) 78.4%
15	11944 (1482) 47.9%	871 (148) 78.7%	130* (98) 96.4%	12946 (1503) 49.5%	287688 (38530) 51.1%	151257 (33712) 76.3%	118577* (67614) 88.0%	557523 (83138) 62.2%
16	7193 (1343) 63.7%	554* (162) 49.5%	90* (66) 84.0%	7837 (1361) 62.6%	184351 (38156) 64.9%	108591* (38835) 52.3%	89288* (54040) 88.2%	382230 (81344) 64.4%
17	22885 (1978) 39.4%	1325 (315) 69.1%	...	24211 (1893) 40.3%	603445 (50296) 48.2%	240955* (66631) 72.8%	...	844400 (69683) 53.3%
20	3772 (564) 33.1%	2561 (330) 79.6%	519 (106) 92.8%	6852 (721) 45.1%	156992 (20891) 40.4%	550748 (82137) 81.7%	470844 (98154) 95.7%	1178584 (112294) 75.8%
21	30* (43) 100.0%	...	53* (37) 66.7%	83* (50) 76.2%	1866* (2685) 100.0%	...	85457* (67004) 76.2%	87323* (66474) 76.6%
22	690* (230) 23.5%	986 (143) 62.1%	259* (84) 86.5%	1934 (334) 40.1%	32015* (11682) 30.2%	232700 (31104) 67.0%	196276* (79626) 75.2%	460990 (79216) 64.5%
23	530* (316) 4.2%	921 (172) 29.7%	153* (77) 63.4%	1604 (395) 10.1%	23445* (11819) 5.5%	202668 (40151) 33.2%	148618* (70595) 71.3%	374730 (81686) 30.2%
24	3296 (571) 30.8%	910 (161) 79.3%	104* (74) 100.0%	4310 (602) 36.0%	138003 (26964) 45.4%	140757 (25310) 76.7%	92355* (52501) 100.0%	371114 (76096) 64.0%
25	523* (204) 12.6%	553* (157) 52.0%	119* (75) 99.6%	1194* (301) 22.3%	26898* (10920) 19.3%	141756* (38760) 55.3%	122998* (62394) 100.0%	291652* (78055) 56.2%
26	1281 (245) 31.1%	1091 (265) 69.5%	203* (74) 94.8%	2575 (371) 43.7%	74849 (11881) 54.4%	207015* (52181) 73.5%	166625* (67320) 80.5%	448489 (99818) 71.6%
27	1511 (360) 8.3%	875 (153) 46.7%	196* (87) 62.0%	2582 (371) 12.7%	74823* (19909) 15.6%	163605 (31197) 45.3%	185403* (65500) 53.6%	423831 (75970) 35.8%
28	3162 (455) 51.2%	1015 (111) 87.5%	320 (64) 84.2%	4496 (440) 58.3%	111863 (13180) 61.9%	226336 (31032) 86.8%	407483* (111193) 85.5%	745682 (118233) 81.2%
29	249* (178) 24.6%	176* (71) 60.0%	91* (42) 90.5%	516* (212) 36.7%	17737* (11943) 43.3%	42572* (18214) 67.3%	101945* (71336) 86.7%	162254* (75800) 73.2%
30	3746 (876) 55.8%	1355 (313) 88.2%	180* (67) 80.3%	5282 (1052) 62.3%	145868 (21872) 64.8%	255354 (56699) 86.7%	208455* (70884) 89.2%	609676 (92285) 80.9%
31	223* (195) 24.0%	318* (88) 55.8%	22* (20) 87.3%	563* (218) 36.9%	5587* (4876) 22.5%	79130* (24213) 58.4%	11650* (10428) 74.4%	96367* (26819) 54.8%
32	3791 (899) 43.1%	967 (144) 95.6%	184* (71) 99.9%	4942 (922) 49.4%	117217 (17761) 49.4%	203087 (32287) 97.2%	128993* (49687) 100.0%	449297 (49854) 78.1%
33	2660 (578) 64.3%	1443 (137) 98.3%	324 (61) 96.0%	4427 (595) 74.5%	97407 (14080) 70.3%	305873 (29406) 98.3%	609529 (84534) 98.1%	1012809 (88722) 94.6%



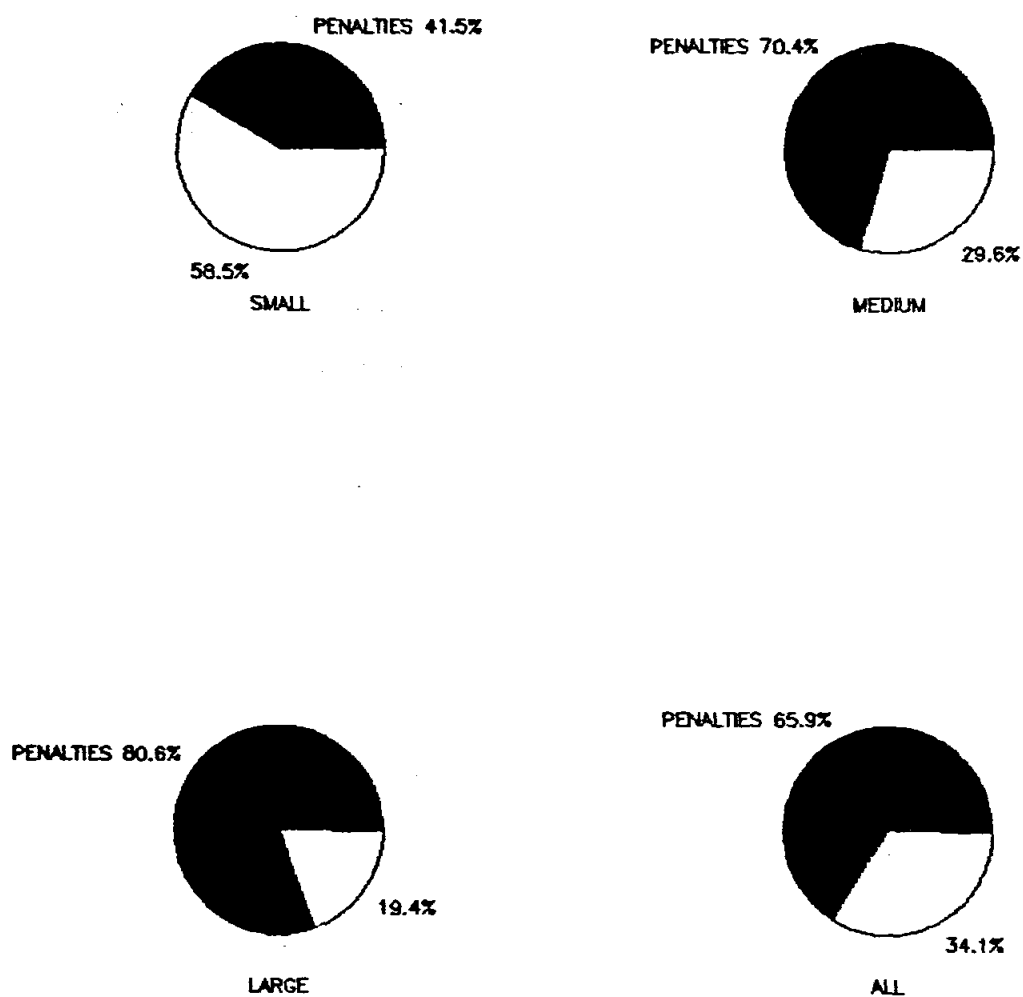
SIC CODE					EMPLOYEES			
	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	10593 (1354) 57.2%	2522 (262) 80.8%	262* (76) 75.9%	13377 (1282) 60.8%	356957 (30944) 64.3%	512330 (38696) 85.9%	286224* (88230) 81.5%	1155512 (83186) 76.9%
35	10659 (1356) 47.1%	2772 (226) 81.4%	630 (101) 80.3%	14060 (1322) 52.4%	330148 (28379) 54.4%	516460 (44475) 78.1%	834294 (128494) 75.0%	1680903 (127915) 70.6%
36	2704 (573) 38.1%	2012 (208) 74.9%	653* (169) 83.0%	5369 (607) 50.8%	127233 (18483) 55.2%	407594 (56648) 73.8%	910070 (158483) 77.0%	1444897 (172381) 73.5%
37	1666 (381) 41.9%	951 (119) 79.9%	363* (93) 87.2%	2979 (390) 53.4%	59742* (15772) 47.0%	200584 (33649) 83.9%	1448437 (234361) 95.7%	1708764 (237019) 90.9%
38	976* (356) 36.3%	711 (106) 74.3%	264* (125) 63.5%	1951 (352) 48.0%	42388* (11268) 40.5%	138218 (23818) 71.1%	286295* (127227) 62.2%	466901* (133094) 61.5%
39	1403* (495) 21.4%	496* (972) 62.2%	328* (221) 97.0%	2226* (1121) 29.0%	43908* (12552) 26.5%	98459* (200550) 65.9%	203369* (123186) 97.1%	345736* (184052) 65.9%
41	756* (389) 17.1%	...	...	756* (389) 15.3%	23864* (13056) 20.3%	...	...	23864* (13056) 12.0%
42	4890 (1029) 24.4%	732* (216) 49.4%	54* (43) 65.4%	5676 (1059) 26.3%	152483 (31500) 31.3%	145158* (42135) 56.1%	52752* (40652) 70.5%	350393 (51122) 42.7%
45	608* (436) 18.8%	590* (397) 99.9%	98* (49) 66.7%	1296* (581) 32.6%	27019* (22001) 34.9%	109332* (75829) 100.0%	144558* (56302) 54.7%	280909* (100309) 62.3%
48	2960* (1049) 20.1%	558 (133) 61.8%	3* (4) 10.1%	3521* (1033) 22.5%	113891* (51095) 26.8%	109267* (35687) 62.0%	13226* (14092) 18.9%	236384* (63576) 35.2%
49	5169* (1674) 62.9%	1862* (567) 100.0%	120* (90) 69.2%	7151* (1892) 69.8%	204398* (58006) 75.9%	425470* (151076) 100.0%	120133* (61318) 82.0%	750001 (181782) 89.1%
50	10215 (1621) 33.7%	1272* (336) 70.6%	...	11487 (1653) 35.7%	252615 (43798) 40.1%	205769* (62806) 72.6%	...	458384 (88214) 50.2%
51	3509* (1219) 38.5%	237* (237) 100.0%	...	3746* (1305) 40.1%	77179* (33099) 41.7%	27013* (27013) 100.0%	...	104191* (47716) 49.1%
55	4037* (1370) 21.3%	...	...	4037* (1370) 20.7%	86521* (32275) 28.0%	...	...	86521* (32275) 21.2%
72	2140* (819) 10.4%	299* (130) 44.3%	13* (19) 100.0%	2452* (848) 11.5%	45651* (18828) 12.0%	40523* (18150) 49.3%	10670* (15114) 100.0%	96845* (35615) 20.5%
73	4514* (1345) 27.2%	594* (165) 39.9%	208* (121) 61.0%	5316* (1378) 28.9%	110500* (35246) 26.2%	153271 (34627) 43.8%	206392* (96183) 62.8%	470162 (98427) 42.7%
75	8931 (1906) 34.1%	59* (60) 99.7%	...	8990 (1918) 34.3%	132706 (27546) 32.1%	8238* (8380) 100.0%	...	140944 (29957) 33.4%
76	3372* (861) 34.6%	36* (45) 29.4%	...	3408* (878) 34.5%	64090* (17021) 35.9%	12672* (15755) 52.1%	...	76762* (24566) 37.9%
80	751* (281) 26.4%	1342 (247) 62.0%	1617 (274) 78.5%	3710 (443) 52.5%	36251* (12003) 35.7%	348994 (74508) 65.3%	2337331 (349954) 77.3%	2722577 (342436) 74.4%
ALL	153892 (6692) 34.5%	34043 (996) 68.7%	7622 (418) 80.9%	195557 (7283) 38.7%	4558673 (160066) 41.4%	6898291 (185579) 70.6%	10038638 (609056) 80.6%	21495602 (723888) 64.6%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

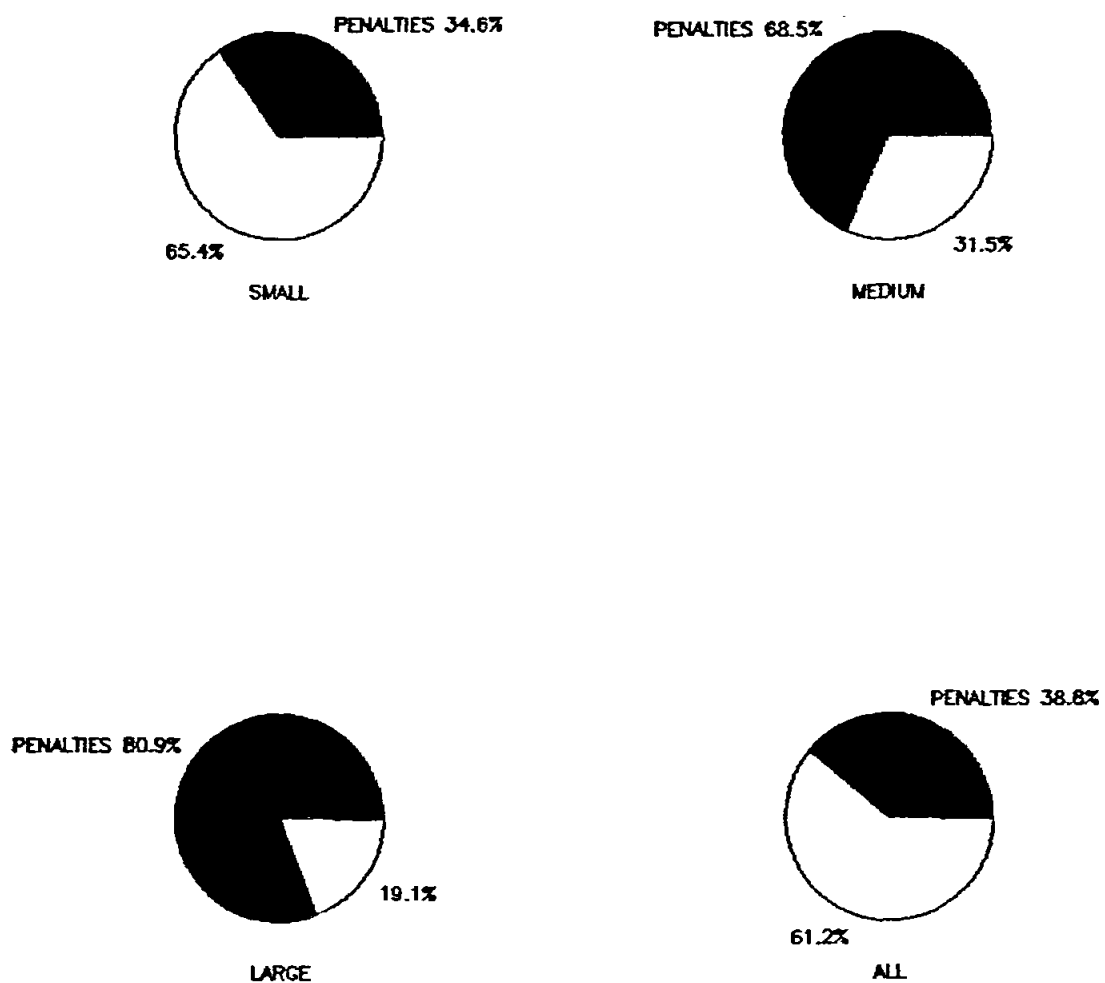
**FIGURE IV - 99**  
**PROPORTION OF PLANTS WHICH USE ECONOMIC**  
**PENALTIES TO ENFORCE PROTECTIVE DEVICE USE**  
**(NOES 1981-1983)**



**FIGURE IV - 100**  
**PROPORTION OF WORKERS IN PLANTS WHICH ENFORCE**  
**PROTECTIVE DEVICE USE WITH ECONOMIC PENALTIES**  
**(NOES 1981-1983)**



**FIGURE IV - 101**  
**PROPORTION OF PLANTS WHICH ENFORCE PROTECTIVE**  
**DEVICE USE WITH ECONOMIC PENALTIES**  
**(NOES 1981-1983)**



**NOES QUESTIONNAIRE ITEM NO. 52**  
**Assessment of Economic Penalties in the Past Year as a**  
**Result of a Protective Device Use Policy**

**Intent**

The intent of this question was to determine whether management-directed actions had been taken in the past year for failure to use protective devices properly which involved direct or indirect economic loss to the worker(s) concerned.

This item was displayed on the questionnaire as:

52. Have any economic penalties been assessed in the past 12 months?

- 1 Yes
- 2 No, we know of no instances where violations of company policy have occurred within the last 12 months
- 3 No, although we know that there was a minimum of one violation of company policy within the last 12 months

**Notes**

This question was asked only of those who responded that the management-directed measures in their facility for improper use of personal protective equipment included the use of economic penalties.

As in question 51, economic penalties must be assessed by plant management, excluding action from any other source, such as a labor union.

**Analysis**

Two analyses of the responses to question 52 are presented.

(1) Response 52.1 - Economic penalties assessed in the past twelve months

The estimated proportions of plants and workers in plants which imposed economic penalties (fines) on workers in the past year for failure to properly use protective devices are displayed in Figures IV-102, IV-103, IV-104, and IV-105.

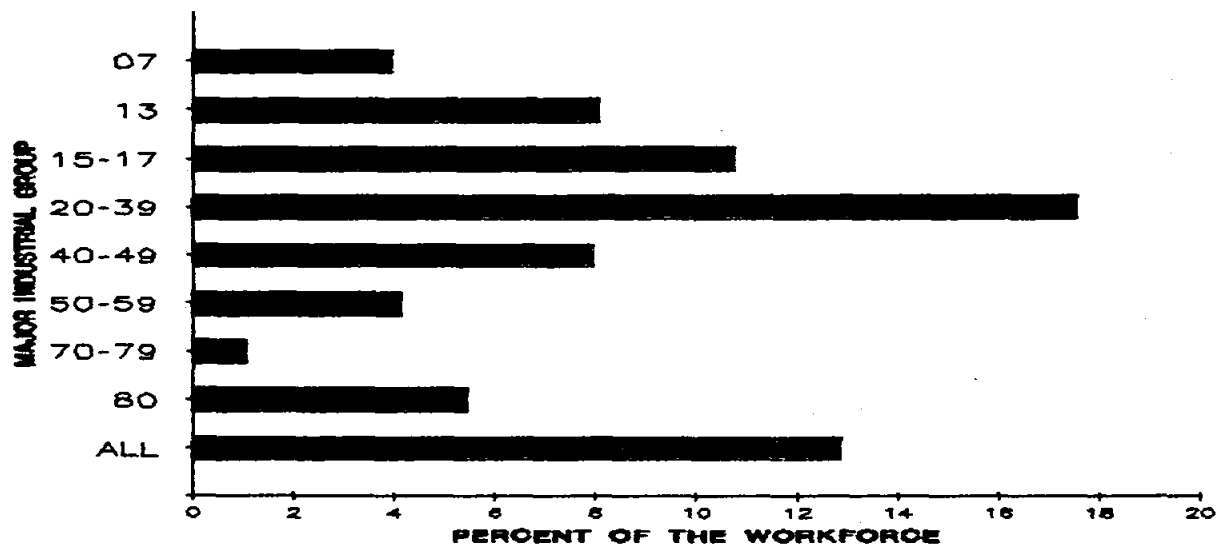
Figure IV-102	Workers in plants which fined employees in the past year for improper use of protective devices (by major industrial group)
Figure IV-103	Workers in plants which fined employees in the past year for improper use of protective devices (by 2-digit SIC)
Figure IV-104	Plants which fined workers in the past year for improper protective device use (by major industrial group)
Figure IV-105	Plants which fined workers in the past year for improper protective device use (by 2-digit SIC)

**(2) Response 52.1, 52.2, or 52.3 - Categories of economic penalties imposed in the past twelve months**

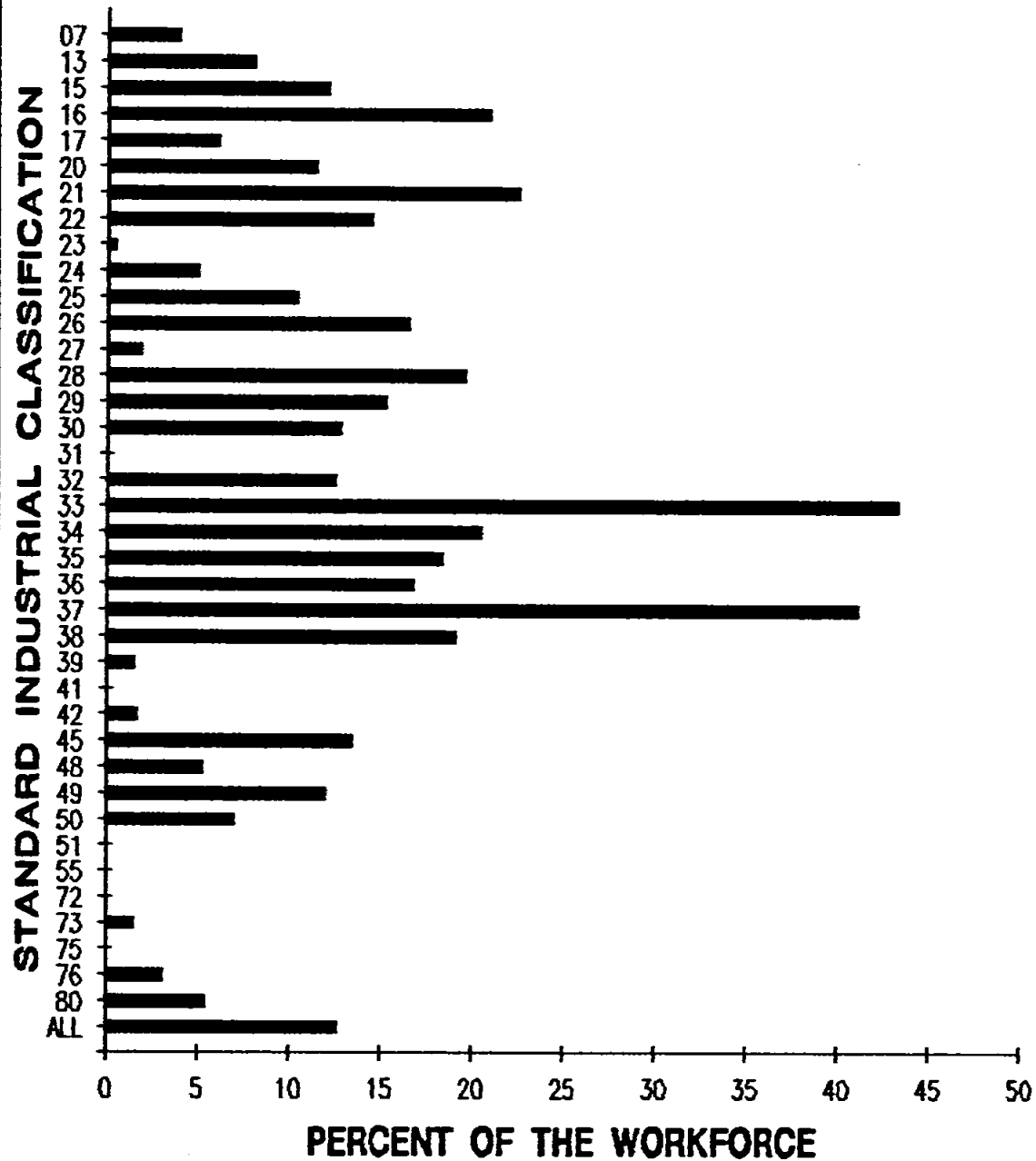
The estimates of the plants which have a policy of assessing economic penalties as part of their corrective measures for improper use of protective devices, by category of penalty assessment, and workers in those plants (by number and proportion of the total) are displayed in Figures IV-106 and IV-107, and Tables IV-69 and IV-70.

<b>Figure IV-106</b>	<b>Proportion of workers in plants by category of economic penalty for failure to use protective devices properly</b>
<b>Figure IV-107</b>	<b>Proportion of plants by category of economic policy for failure to use protective devices properly</b>
<b>Table IV-69</b>	<b>Number and percent of plants and workers in plants by category of economic penalty for improper protective device use in the past year (by major industrial group)</b>
<b>Table IV-70</b>	<b>Number and percent of plants and workers in plants by category of economic penalty for improper protective device use in the past year (by 2-digit SIC)</b>

**FIGURE IV - 102**  
**WORKERS IN PLANTS WHICH FINED EMPLOYEES IN THE**  
**PAST YEAR FOR IMPROPER USE OF PROTECTIVE DEVICES**  
**(NOES 1981-1983)**

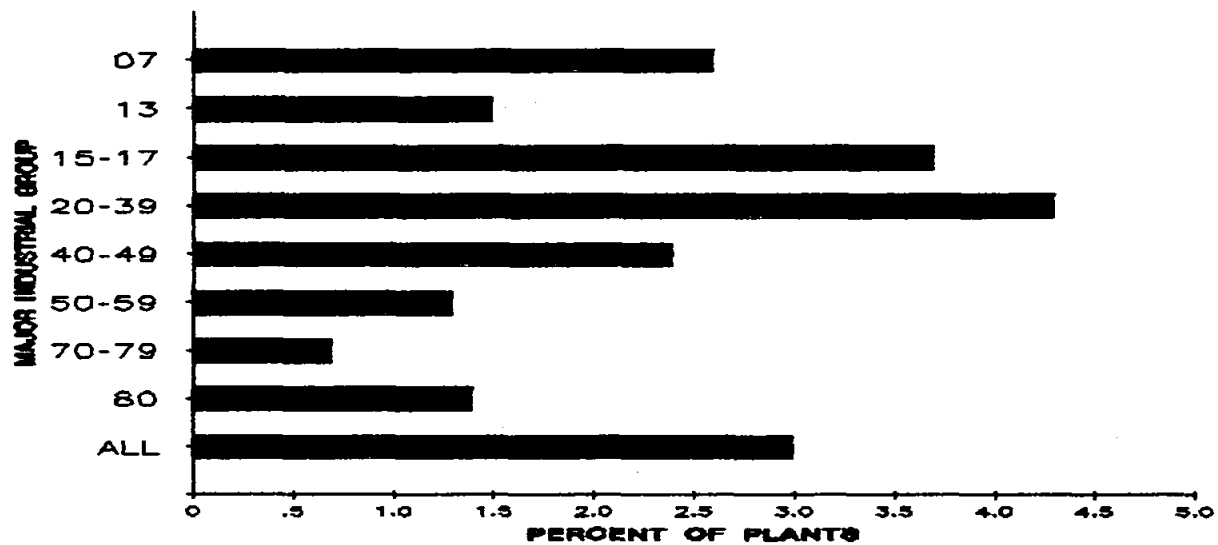


**FIGURE IV - 103**  
**WORKERS IN PLANTS WHICH FINED EMPLOYEES IN THE**  
**PAST YEAR FOR IMPROPER USE OF PROTECTIVE DEVICES**  
**(NOES 1981-1983)**

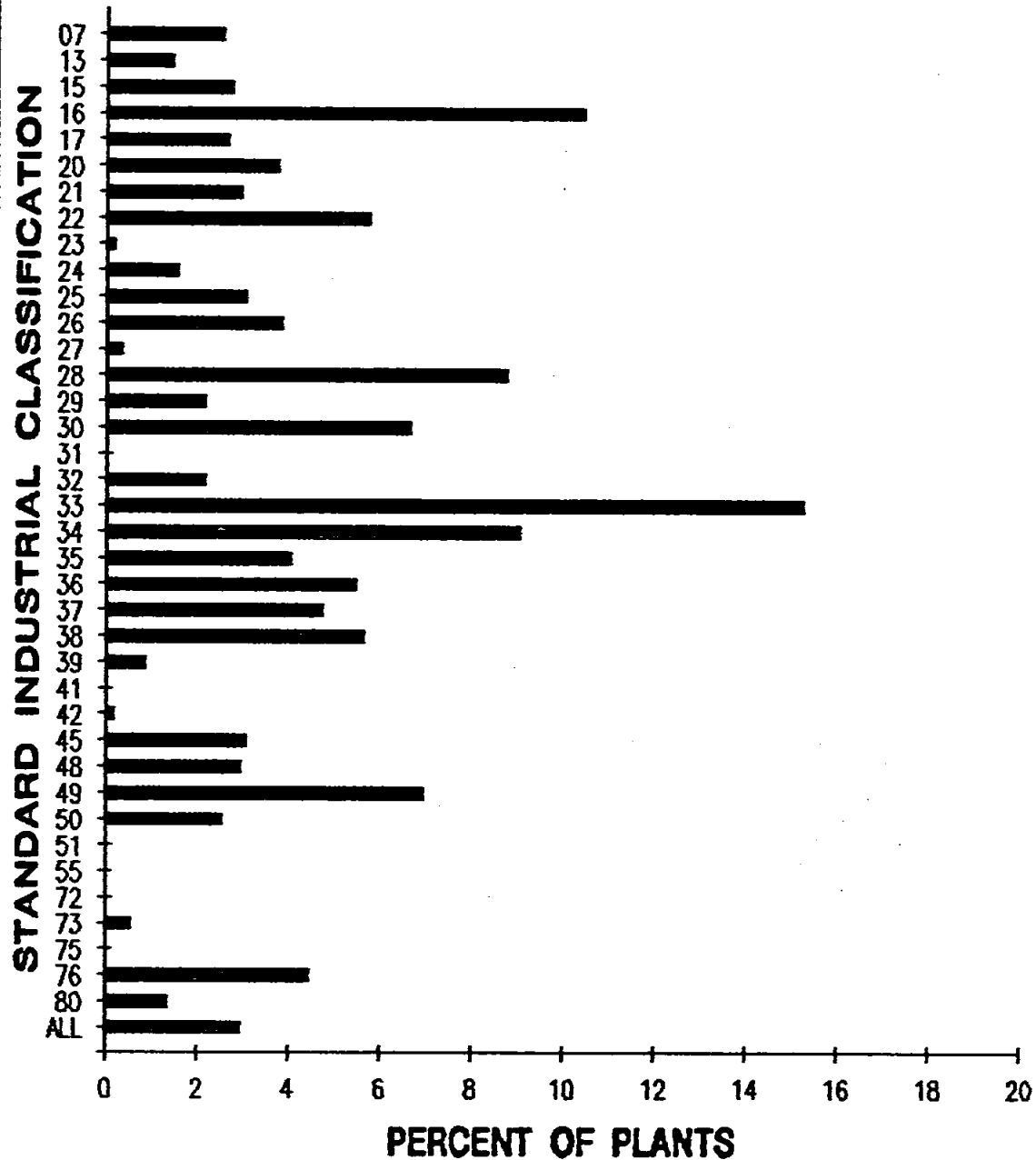




**FIGURE IV - 104**  
**PLANTS WHICH FINED WORKERS IN THE PAST**  
**YEAR FOR IMPROPER PROTECTIVE DEVICE USE**  
**(NOS 1961-1983)**



**FIGURE IV - 105**  
**PLANTS WHICH FINED WORKERS IN THE PAST**  
**YEAR FOR IMPROPER PROTECTIVE DEVICE USE**  
**(NOES 1981-1983)**



NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-69

NUMBER AND PERCENT OF PLANTS AND WORKERS IN PLANTS BY CATEGORY OF ECONOMIC  
PENALTY FOR IMPROPER PROTECTIVE DEVICE USE IN THE PAST YEAR

MAJOR GROUP	PLANTS			WORKERS		
	ASSESSED PENALTIES	NO VIOLATIONS	UNPENALIZED VIOLATIONS	ASSESSED PENALTIES	NO VIOLATIONS	UNPENALIZED VIOLATIONS
07	149* (147) 2.6%	1727* (689) 30.7%	...	4456* (4395) 4.0%	44293* (15193) 40.0%	...
13	143* (59) 1.5%	4695 (1109) 48.6%	916* (388) 9.5%	33518* (10924) 8.1%	210370* (65717) 50.8%	80751* (29177) 19.5%
15-17	3699 (879) 3.7%	33715 (2331) 34.2%	7579 (1560) 7.7%	332098* (96637) 10.8%	1129095 (100786) 36.8%	322961 (69397) 10.5%
20-39	8221 (1046) 4.3%	57683 (2753) 30.2%	15420 (1638) 8.1%	3388180 (298401) 17.6%	7067702 (384528) 36.7%	3059629 (298278) 15.9%
40-49	1445* (584) 2.4%	14040 (2119) 23.6%	4561 (591) 7.7%	251909* (71575) 8.0%	1092411 (189492) 34.6%	422853 (75864) 13.4%
50-59	824* (391) 1.3%	16044 (2940) 26.3%	2402* (833) 3.9%	65087* (25750) 4.2%	501666 (88928) 32.7%	82343* (25655) 5.4%
70-79	557* (499) .7%	17464 (2581) 23.0%	2145* (1098) 2.8%	24255* (16707) 1.1%	644924 (103940) 29.4%	115534* (34752) 5.3%
80	100* (42) 1.4%	3378 (437) 47.8%	232* (85) 3.3%	199411* (80168) 5.5%	2205092 (309678) 60.3%	318075* (112164) 8.7%
ALL	15136 (1624) 3.0%	148747 (5892) 29.2%	33254 (2743) 6.5%	4298914 (333186) 12.9%	12895552 (559544) 38.6%	4402146 (338879) 13.2%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
...No facilities observed.

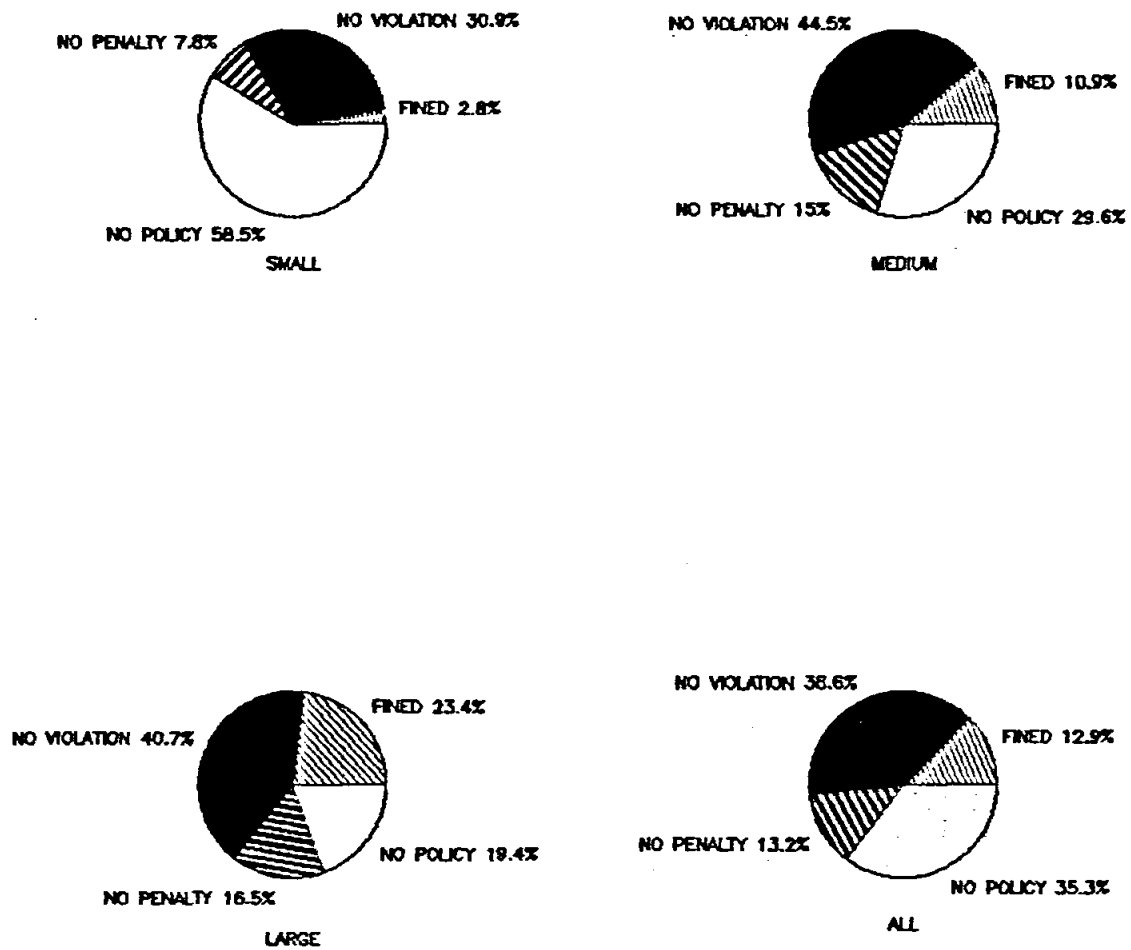
NUMBER AND PERCENT OF PLANTS AND WORKERS IN PLANTS BY CATEGORY OF ECONOMIC  
PENALTY FOR IMPROPER PROTECTIVE DEVICE USE IN THE PAST YEAR

SIC CODE	PLANTS			WORKERS		
	ASSESSED PENALTIES	NO VIOLATIONS	UNPENALIZED VIOLATIONS	ASSESSED PENALTIES	NO VIOLATIONS	UNPENALIZED VIOLATIONS
07	149* (147) 2.6%	1727* (689) 30.7%	...	4456* (4395) 4.0%	44293* (15193) 40.0%	...
13	143* (59) 1.5%	4695 (1109) 48.6%	916* (388) 9.5%	33518* (10924) 8.1%	210370* (65717) 50.8%	80751* (29177) 19.5%
15	744* (398) 2.8%	10141 (1179) 38.8%	2061* (567) 7.9%	109064* (69300) 12.2%	340093 (57042) 38.0%	108366* (29076) 12.1%
16	1312* (552) 10.5%	4508 (1044) 36.0%	2017* (630) 16.1%	124531* (39423) 21.0%	153181* (48115) 25.8%	104519* (46739) 17.6%
17	1643* (547) 2.7%	19066 (1945) 31.8%	3501* (1115) 5.8%	98503* (32662) 6.2%	635821 (68408) 40.2%	110077* (30044) 7.0%
20	580* (238) 3.8%	4753 (626) 31.3%	1518* (490) 10.0%	178876* (66077) 11.5%	730781 (96402) 47.0%	268927* (75515) 17.3%
21	3* (4) 3.0%	43* (34) 39.5%	37* (45) 33.7%	25744* (28069) 22.6%	56325* (44772) 49.4%	5254* (9815) 4.6%
22	278* (97) 5.8%	1307* (339) 27.1%	349* (137) 7.2%	104081* (41483) 14.6%	247992 (36650) 34.7%	108917* (62191) 15.3%
23	30* (30) .2%	1380* (378) 8.7%	194* (55) 1.2%	6724* (6697) .5%	307107 (66321) 24.7%	60899* (32825) 4.9%
24	192* (120) 1.6%	3521 (612) 29.4%	597* (250) 5.0%	29690* (18580) 5.1%	257688* (66302) 44.5%	83736* (34997) 14.4%
25	163* (116) 3.1%	862 (180) 16.1%	169* (158) 3.2%	54507* (25063) 10.5%	218592* (68799) 42.2%	18553* (16632) 3.6%
26	228* (161) 3.9%	1818 (333) 30.8%	529* (184) 9.0%	103898* (62762) 16.6%	243066* (68101) 38.8%	101526* (38449) 16.2%
27	87* (44) .4%	2205 (356) 10.9%	290* (132) 1.4%	24261* (19555) 2.0%	350567 (73656) 29.6%	49003* (23109) 4.1%
28	679* (215) 8.8%	3130 (419) 40.6%	687* (206) 8.9%	180836* (73095) 19.7%	409637 (82729) 44.6%	155210* (54813) 16.9%
29	31* (31) 2.2%	157* (96) 11.2%	328* (203) 23.3%	34219* (54628) 15.4%	55262* (35434) 24.9%	72773* (35971) 32.8%
30	569* (415) 6.7%	3390 (741) 40.0%	1323* (401) 15.6%	97115* (29262) 12.9%	289849 (63885) 38.5%	222713* (68143) 29.6%
31	...	483* (211) 31.7%	80* (49) 5.3%	...	78529* (21931) 44.6%	11838* (11187) 10.1%
32	218* (102) 2.2%	3614 (786) 36.2%	1110* (304) 11.1%	72347* (34844) 12.6%	302706 (51249) 52.6%	74244* (30529) 12.9%
33	909* (269) 15.3%	2842 (623) 47.9%	676* (236) 11.4%	464999 (56900) 43.4%	324810 (75768) 30.3%	223001* (68684) 20.8%

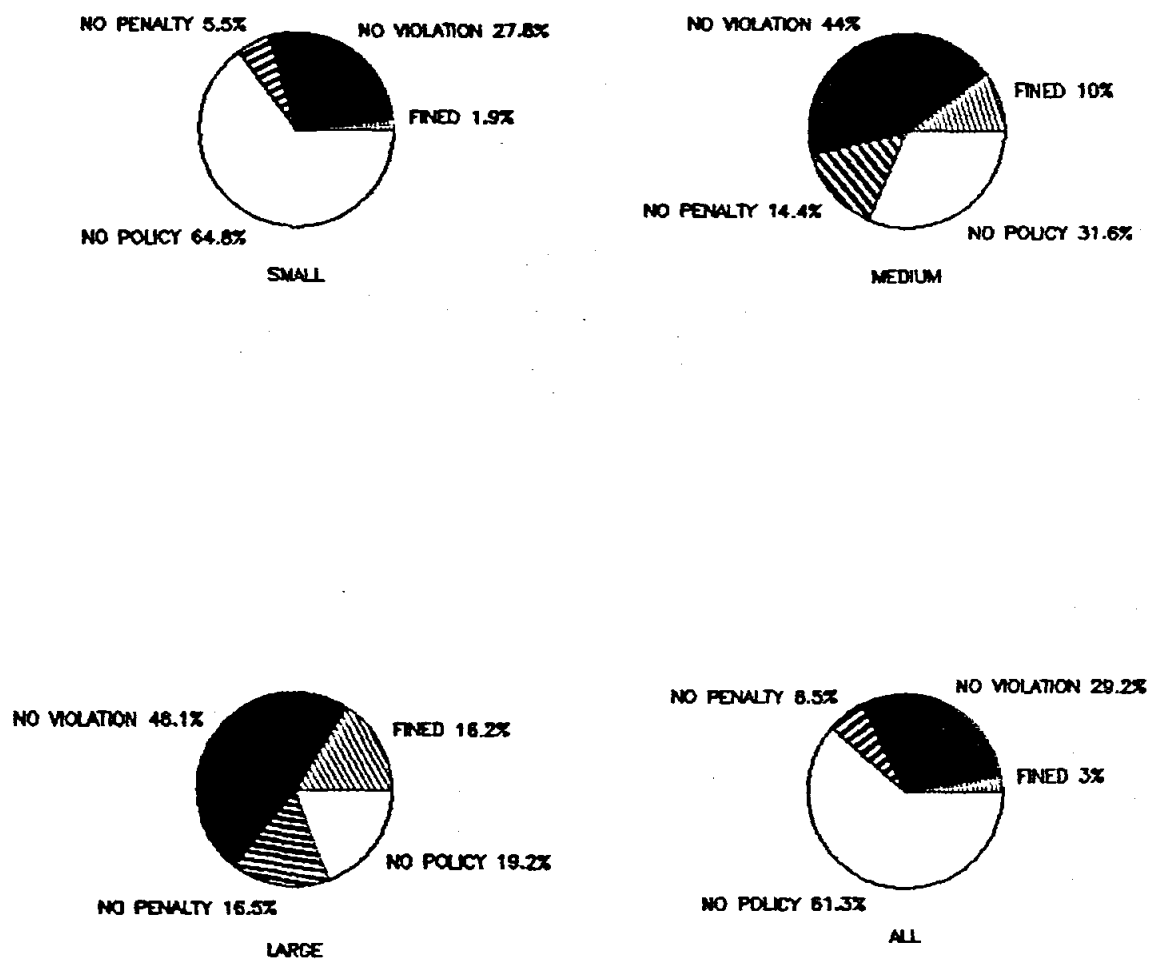
SIC CODE	PLANTS			WORKERS		
	ASSESSED PENALTIES	NO VIOLATIONS	UNPENALIZED VIOLATIONS	ASSESSED PENALTIES	NO VIOLATIONS	UNPENALIZED VIOLATIONS
34	1991* (676) 9.1%	9034 (806) 41.1%	2352 (484) 10.7%	309017* (86239) 20.6%	589849 (72515) 39.3%	256645 (45549) 17.1%
35	1107* (342) 4.1%	10254 (1058) 38.2%	2699 (590) 10.1%	440769 (75406) 18.5%	790656 (71711) 33.2%	449478 (64409) 18.9%
36	580 (136) 5.5%	3446 (595) 32.6%	1343* (386) 12.7%	332519 (47644) 16.9%	710846 (114361) 36.2%	401531* (101016) 20.4%
37	271* (83) 4.8%	2143 (361) 38.4%	566* (169) 10.1%	774468 (188089) 41.2%	593891 (104912) 31.6%	340404* (118093) 18.1%
38	233* (115) 5.7%	1415 (342) 34.8%	303* (131) 7.5%	145725* (90194) 19.2%	239778* (64689) 31.6%	81398* (60617) 10.7%
39	71* (71) .9%	1887* (898) 24.5%	268* (298) 3.5%	8386* (15189) 1.6%	269772* (140354) 51.4%	67578* (69657) 12.9%
41	...	756* (389) 15.3%	...	...	23864* (13056) 12.0%	...
42	35* (25) .2%	4531 (995) 21.0%	1110* (498) 5.1%	14544* (9398) 1.8%	243615 (46901) 29.7%	92234* (43002) 11.2%
45	124* (119) 3.1%	972* (447) 24.4%	200* (129) 5.0%	61313* (49859) 13.6%	164800* (65785) 36.5%	54796* (34543) 12.1%
48	467* (309) 3.0%	1758* (771) 11.2%	1296* (820) 8.3%	36235* (23012) 5.4%	126363* (59190) 18.8%	73786* (39568) 11.0%
49	713* (437) 7.0%	4747* (1325) 46.3%	1691* (792) 16.5%	102230* (50376) 12.1%	454994* (146109) 54.1%	192777* (73614) 22.9%
50	824* (391) 2.6%	9515 (1787) 29.6%	1148* (490) 3.6%	65087* (25750) 7.1%	331720 (79590) 36.3%	61577* (28739) 6.7%
51	...	3026* (1188) 32.4%	719* (727) 7.7%	...	94021* (46064) 44.3%	10170* (7986) 4.8%
55	...	3503* (1314) 17.9%	535* (362) 2.7%	...	75925* (26567) 18.6%	10596* (10949) 2.6%
72	...	2287* (834) 10.7%	165* (121) .8%	...	83676* (34215) 17.7%	13169* (9104) 2.8%
73	113* (113) .6%	5003* (1359) 27.2%	201* (118) 1.1%	17846* (17018) 1.6%	392832* (98449) 35.7%	59484* (19243) 5.4%
75	...	7840 (1678) 29.9%	1150* (935) 4.4%	...	122791 (26850) 29.1%	18152* (15986) 4.3%
76	444* (467) 4.5%	2335* (985) 23.6%	629* (514) 6.4%	6409* (5673) 3.2%	45625* (18927) 22.5%	24729* (18405) 12.1%
80	100* (42) 1.4%	3378 (437) 47.8%	232* (85) 3.3%	199411* (80168) 5.5%	2205092 (309678) 60.3%	318075* (112164) 8.7%
ALL	15057 (1518) 3.0%	147510 (6117) 29.2%	32990 (3030) 6.5%	4270415 (312964) 12.8%	12832300 (626804) 38.6%	4392886 (350904) 13.2%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE IV – 106**  
**PROPORTION OF WORKERS IN PLANTS BY CATEGORY OF ECONOMIC**  
**PENALTY FOR FAILURE TO USE PROTECTIVE DEVICES PROPERLY**  
**(NOES 1981-1983)**



**FIGURE IV - 107**  
**PROPORTION OF PLANTS BY CATEGORY OF ECONOMIC**  
**PENALTY FOR FAILURE TO USE PROTECTIVE DEVICES PROPERLY**  
**(NOES 1981-1983)**



**NOES QUESTIONNAIRE ITEM NO. 53**  
**Existence of a Program to Regularly Conduct Safety Inspections**

**Intent**

The intent of this question was to determine if regular or periodic safety inspections of the facility were conducted.

This item was displayed on the questionnaire as:

53. Do you have a program under which you regularly or periodically conduct safety inspections of this facility?

- 1 Yes
- 2 No (Skip to Question 56)

**Notes**

A "regular or periodic safety inspection" refers to programs established by facility management which provide inspections on a planned or predictable basis.

Regular or periodic safety inspections performed by consultants, insurance carrier specialists, or other non-government outside sources at the request of facility management meet the criteria for an affirmative response.

Safety inspections conducted by a government agency, precipitated by an accident, or which are conducted as isolated one-time events would result in a negative response to this question.

**Analysis**

One analysis of the responses to question 53 is presented.

**Response 53.1 - Regular or periodic safety inspections conducted**

The estimates of the plants which conduct regular or periodic safety inspection of the facility, and workers in those plants (by number and proportion of the total) are displayed in Figures IV-108, IV-109, IV-110, IV-111, IV-112, and IV-113, and Tables IV-71 and IV-72.

Figure IV-108	Workers in plants which periodically conduct safety inspections (by major industrial group)
Figure IV-109	Workers in plants which periodically conduct safety inspections (by 2-digit SIC)
Figure IV-110	Plants which periodically conduct safety inspections (by major industrial group)
Figure IV-111	Plants which periodically conduct safety inspections (by 2-digit SIC)
Figure IV-112	Workers in plants which have periodic safety inspections by plant size



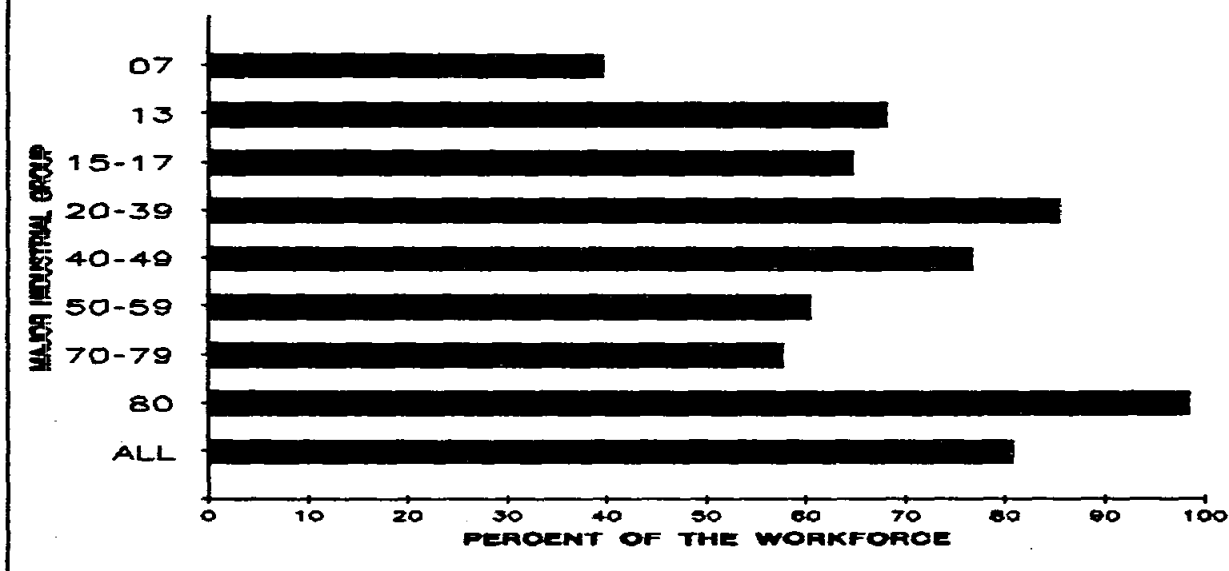
**Figure IV-113**  
**Table IV-71**

**Plants which regularly conduct safety inspections**  
**Number and percent of plants and employees in plants**  
**which periodically conduct safety inspections of the**  
**facility (by major industrial group)**

**Table IV-72**

**Number and percent of plants and employees in plants**  
**which periodically conduct safety inspections of the**  
**facility (by 2-digit SIC)**

**FIGURE IV - 108**  
**WORKERS IN PLANTS WHICH PERIODICALLY**  
**CONDUCT SAFETY INSPECTIONS**  
**(NOES 1981-1983)**



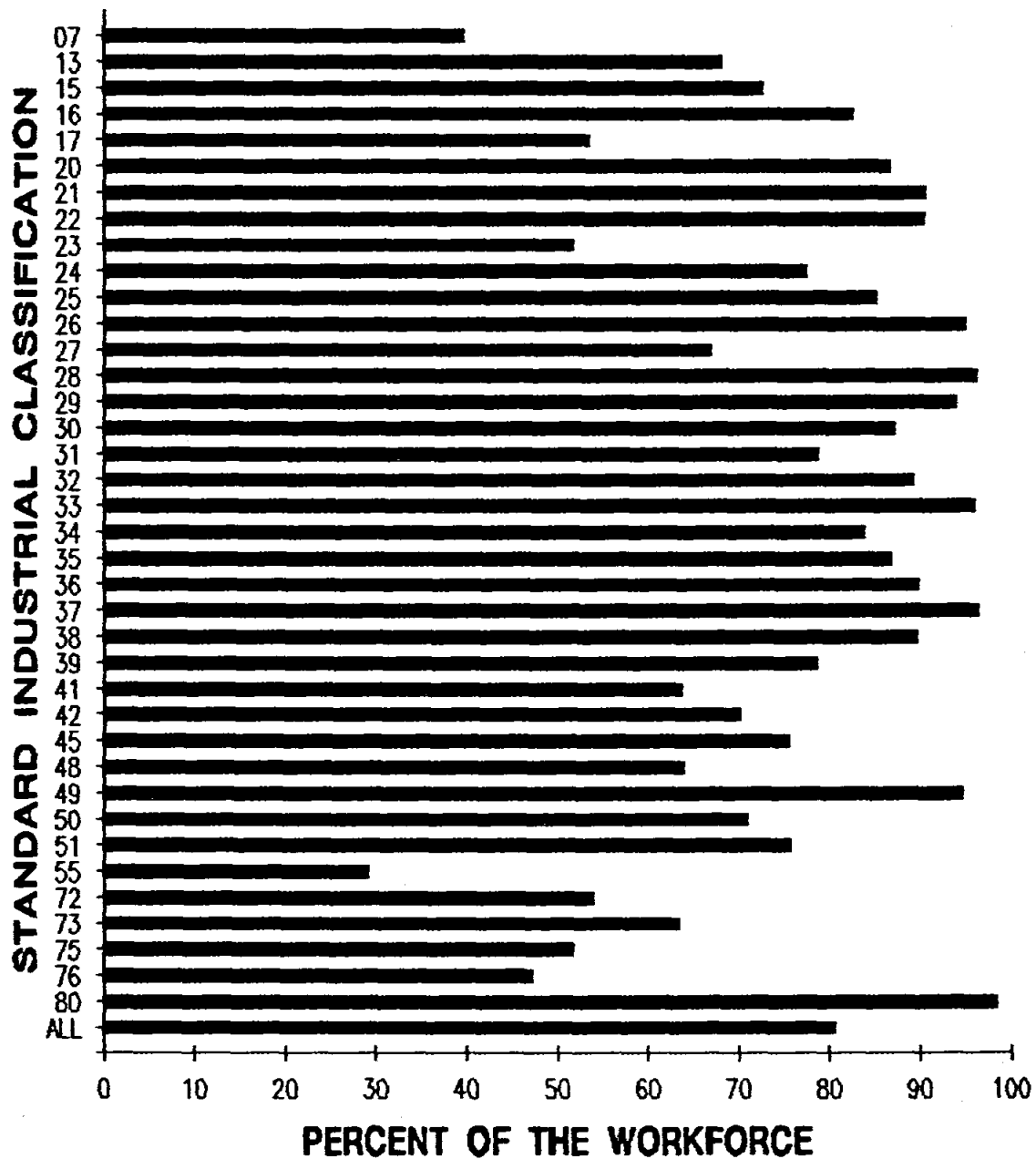
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-71

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 PERIODICALLY CONDUCT SAFETY INSPECTIONS OF THE FACILITY

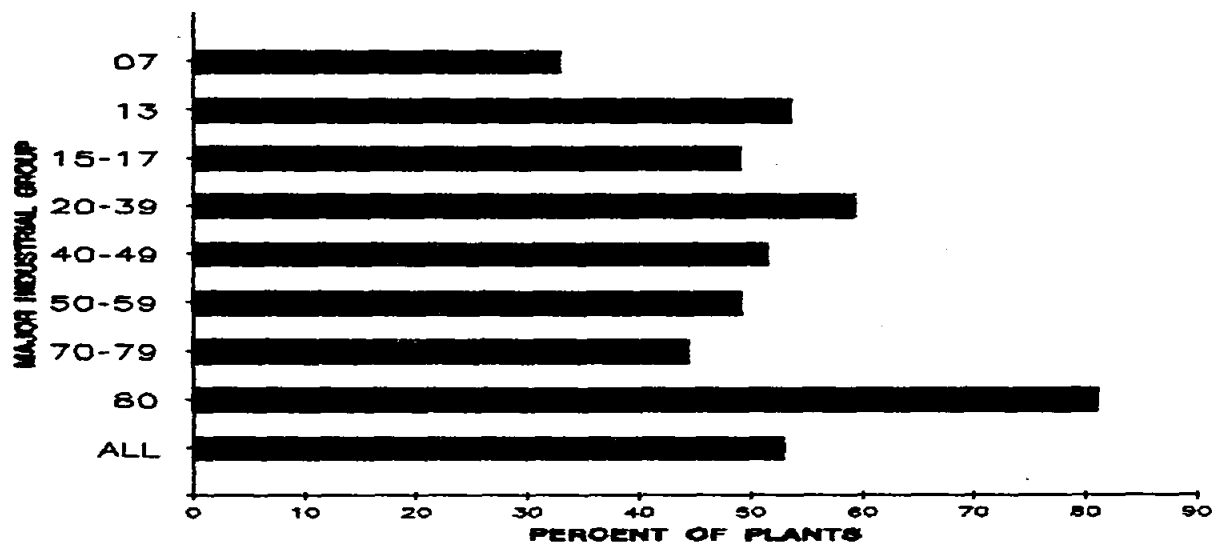
MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	1867* (863) 33.6%	...	...	1867* (863) 33.1%	44128* (22107) 42.6%	...	...	44128* (22107) 39.9%
13	4437* (1460) 51.6%	715* (276) 70.2%	46* (52) 100.0%	5198* (1517) 53.8%	116482* (38382) 55.7%	135216* (51999) 77.7%	31383* (35291) 100.0%	283081* (80867) 68.3%
15-17	45090 (2272) 47.8%	3359 (427) 81.0%	220* (128) 90.8%	48668 (2186) 49.3%	1157145 (46216) 55.1%	617996 (91994) 83.8%	217943* (92867) 92.3%	1993084 (122952) 64.9%
20-39	80171 (2740) 52.3%	27462 (1593) 86.5%	6092 (163) 97.2%	113725 (3224) 59.5%	2755069 (67179) 59.7%	5651482 (333718) 88.6%	8074367 (261536) 97.7%	16480918 (503758) 85.6%
40-49	25374 (1920) 47.7%	4920 (829) 84.2%	468* (134) 100.0%	30763 (2112) 51.7%	844177 (80444) 58.9%	1012223 (193466) 87.8%	573743 (106392) 100.0%	2430143 (234965) 76.9%
50-59	28192 (2777) 48.3%	1952* (563) 73.4%	...	30143 (2799) 49.4%	636146 (69547) 56.6%	294884* (83379) 72.1%	...	931029 (110607) 60.7%
70-79	32074 (2614) 43.9%	1554 (284) 66.2%	308* (148) 87.0%	33936 (2667) 44.7%	652067 (68362) 46.8%	325960 (57745) 70.2%	293484* (119908) 86.4%	1271511 (135297) 57.9%
80	1636* (597) 57.6%	2047 (254) 94.5%	2061 (304) 100.0%	5745 (660) 81.3%	67180* (19225) 66.1%	515989 (76637) 96.5%	3022676 (359103) 100.0%	3605845 (351421) 98.6%
ALL	218841 (5842) 48.7%	42009 (1986) 84.0%	9195 (421) 97.4%	270045 (6170) 53.1%	6272392 (157993) 56.6%	8553750 (419671) 86.8%	12213596 (482621) 98.0%	27039739 (696535) 80.9%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

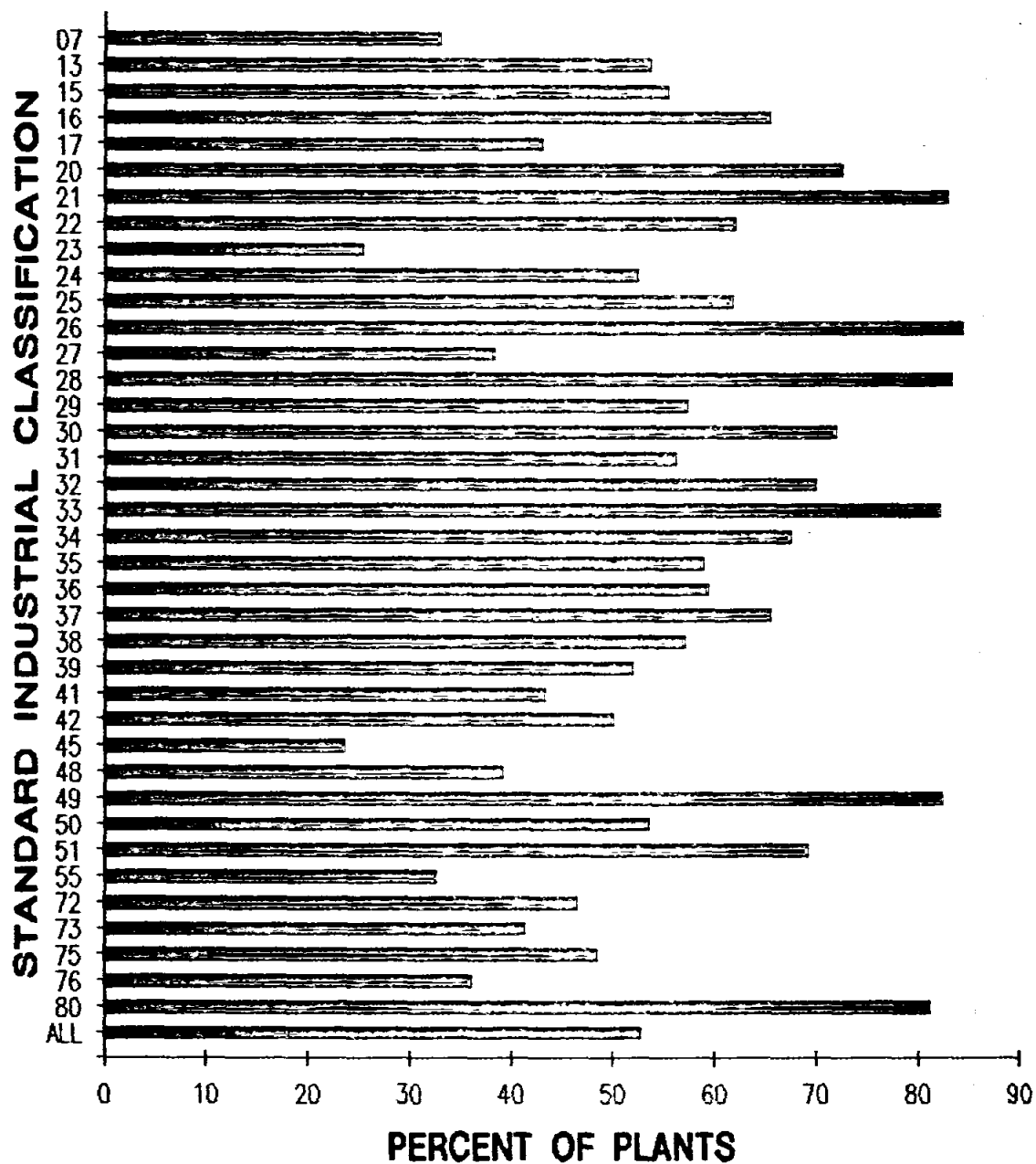
**FIGURE IV - 109**  
**WORKERS IN PLANTS WHICH PERIODICALLY**  
**CONDUCT SAFETY INSPECTIONS**  
**(NOES 1981-1983)**



**FIGURE IV - 110**  
**PLANTS WHICH PERIODICALLY CONDUCT**  
**SAFETY INSPECTIONS**  
**(NOES 1981-1983)**



**FIGURE IV - 111**  
**PLANTS WHICH REGULARLY CONDUCT**  
**SAFETY INSPECTIONS**  
**(NOES 1981-1983)**



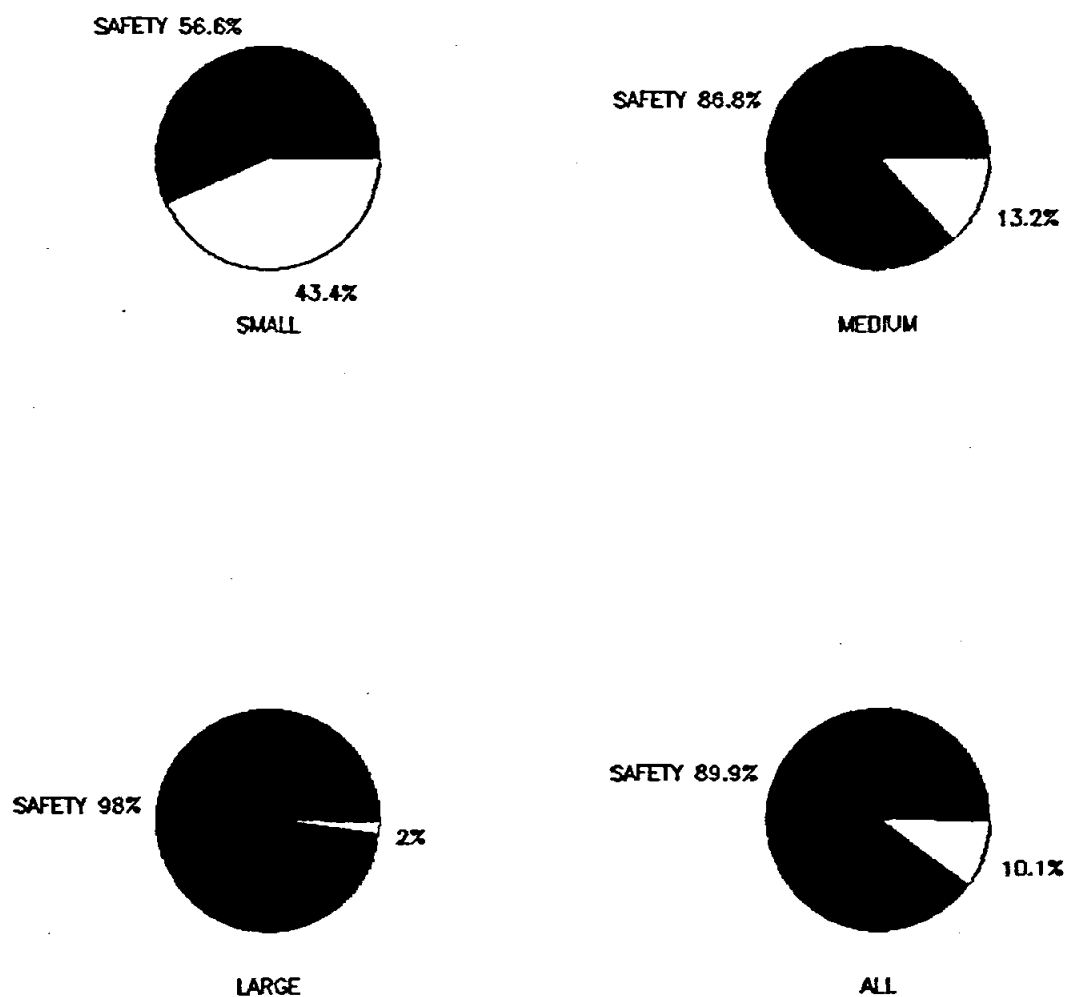
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
PERIODICALLY CONDUCT SAFETY INSPECTIONS OF THE FACILITY

SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	1867* (863) 33.6%	...	...	1867* (863) 33.1%	44128* (22107) 42.6%	...	...	44128* (22107) 39.9%
13	4437* (1460) 51.6%	715* (276) 70.2%	46* (52) 100.0%	5198* (1517) 53.8%	116482* (38382) 55.7%	135216* (51999) 77.7%	31383* (35291) 100.0%	283081* (80867) 68.3%
15	13301 (1046) 53.4%	1107 (197) 100.0%	112* (97) 83.3%	14521 (1076) 55.5%	337546 (29236) 60.0%	198218 (38188) 100.0%	116685* (68268) 86.6%	652450 (87683) 72.8%
16	7124 (1102) 63.1%	975 (191) 87.2%	107* (67) 100.0%	8206 (1124) 65.6%	198753 (37738) 70.0%	190463 (43829) 91.7%	101258* (53561) 100.0%	490473 (85774) 82.7%
17	24665 (2021) 42.4%	1276* (325) 66.5%	...	25941 (1908) 43.2%	620846 (38429) 49.6%	229315* (63409) 69.3%	...	850161 (53957) 53.7%
20	7540 (771) 66.1%	2982 (485) 92.7%	533 (110) 95.4%	11055 (867) 72.8%	270775 (24691) 69.7%	641475 (110039) 95.2%	436908 (82784) 88.8%	1349158 (109020) 86.8%
21	30* (43) 100.0%	...	60* (38) 76.1%	90* (50) 83.0%	1866* (2685) 100.0%	...	101476* (68062) 90.5%	103342* (67354) 90.7%
22	1156* (382) 39.4%	1544 (151) 97.2%	299* (80) 99.9%	2998 (383) 62.2%	45137* (11460) 42.6%	340764 (28104) 98.2%	261093* (94186) 100.0%	646994 (90659) 90.6%
23	2192* (575) 17.5%	1632 (193) 52.6%	242* (93) 100.0%	4067 (626) 25.6%	91109 (20816) 21.5%	346948 (38984) 56.9%	208437* (79559) 100.0%	646494 (91851) 52.0%
24	5027 (594) 46.9%	1148 (128) 100.0%	104* (74) 100.0%	6279 (606) 52.5%	173718 (26778) 57.2%	183585 (22297) 100.0%	92355* (52501) 100.0%	449658 (75444) 77.6%
25	2193 (472) 52.7%	999 (171) 94.1%	119* (75) 99.6%	3310 (511) 61.9%	76639 (17465) 55.1%	243298 (41624) 94.9%	122998* (62394) 100.0%	442935 (80734) 85.4%
26	3298 (626) 80.2%	1469 (221) 93.6%	214* (73) 100.0%	4982 (645) 84.5%	119626 (15845) 86.9%	268704 (47434) 95.5%	206864* (65220) 100.0%	595194 (87641) 95.1%
27	5974 (871) 33.0%	1601 (169) 85.5%	253* (106) 80.0%	7827 (874) 38.5%	219696 (26469) 45.9%	305346 (46614) 84.6%	270475* (77746) 78.2%	795516 (103090) 67.1%
28	4893 (584) 79.3%	1160 (93) 100.0%	380 (63) 100.0%	6433 (562) 83.4%	148984 (10495) 82.4%	260831 (27986) 100.0%	476341 (101388) 100.0%	886156 (105468) 96.5%
29	414* (252) 41.0%	293* (125) 100.0%	101* (42) 100.0%	809* (310) 57.5%	27919* (16421) 68.1%	63255* (21394) 100.0%	117545* (70259) 100.0%	208719* (81884) 94.1%
30	4605 (681) 68.6%	1281* (384) 83.3%	224* (73) 99.9%	6110 (887) 72.1%	166127 (19528) 73.8%	258619* (81293) 87.8%	233647* (72848) 100.0%	658393 (104414) 87.4%
31	359* (201) 38.5%	474 (115) 83.3%	25* (24) 100.0%	858* (268) 56.3%	12383* (5865) 49.8%	111078* (30063) 82.0%	15664* (16901) 100.0%	139125* (36979) 79.0%
32	5815 (781) 66.1%	1008 (141) 99.6%	184* (71) 99.9%	7007 (800) 70.1%	177844 (16168) 75.0%	207551 (30631) 99.3%	128993* (49687) 100.0%	514388 (48881) 89.4%
33	3160 (430) 76.4%	1386 (152) 94.4%	337 (62) 100.0%	4883 (447) 82.2%	119299 (13192) 86.2%	289943 (36404) 93.2%	621499 (82456) 100.0%	1030741 (88789) 96.2%

SIC CODE					EMPLOYEES			
	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	11800 (772) 63.7%	2739 (167) 87.7%	323 (79) 93.4%	14862 (839) 67.6%	387799 (16675) 69.9%	539092 (32355) 90.3%	336688* (100855) 95.9%	1263579 (111476) 84.1%
35	11905 (1096) 52.6%	3162 (121) 92.9%	784 (79) 100.0%	15851 (1093) 59.1%	353112 (28429) 58.2%	602208 (15404) 91.1%	1112933 (147534) 100.0%	2068253 (154038) 86.9%
36	3364 (737) 47.3%	2196 (122) 81.8%	740 (159) 94.1%	6300 (814) 59.6%	136178 (22891) 59.1%	486834 (17781) 88.1%	1146676 (186573) 97.0%	1769688 (193171) 90.0%
37	2203* (617) 55.5%	1044 (111) 87.8%	416 (92) 99.9%	3663 (659) 65.7%	78753* (20209) 62.0%	223643 (28220) 93.5%	1514008 (247233) 100.0%	1816404 (240062) 96.6%
38	1063* (403) 39.5%	847 (96) 88.5%	416* (139) 99.9%	2325 (472) 57.2%	54024* (13936) 51.6%	168042 (26176) 86.4%	460397* (129998) 100.0%	682464 (142600) 89.9%
39	3179 (633) 48.5%	497* (906) 62.2%	338* (216) 100.0%	4014* (1113) 52.2%	94083 (17340) 56.7%	110265* (206269) 73.8%	209369* (120490) 100.0%	413717* (188896) 78.8%
41	1819* (606) 41.1%	329* (126) 64.5%	...	2147* (620) 43.6%	68737* (24902) 58.4%	58610* (32330) 71.9%	...	127347* (39518) 63.9%
42	9491 (1452) 47.4%	1269 (302) 85.7%	82* (54) 99.5%	10842 (1491) 50.2%	282546 (45708) 57.9%	219852 (51588) 84.9%	74830* (49333) 100.0%	577228 (66331) 70.3%
45	606* (277) 18.7%	194* (194) 32.8%	147* (57) 100.0%	947* (347) 23.8%	22150* (10528) 28.6%	55275* (55275) 50.6%	264255* (77656) 100.0%	341679* (87550) 75.7%
48	5258 (1294) 35.8%	853 (174) 94.6%	34* (21) 99.0%	6145 (1309) 39.3%	197155* (66514) 46.3%	164076 (37437) 93.1%	70083* (43687) 100.0%	431315 (89792) 64.2%
49	6417 (1566) 78.1%	1862* (567) 100.0%	173* (99) 99.8%	8452 (1777) 82.5%	225639 (54673) 83.8%	425470* (151076) 100.0%	146565* (65566) 100.0%	797673 (185062) 94.8%
50	15540 (1840) 51.2%	1715* (479) 95.2%	...	17254 (1948) 53.7%	382721 (54934) 60.7%	267871* (78283) 94.6%	...	650592 (104732) 71.2%
51	6251 (1067) 68.6%	237* (237) 100.0%	...	6488 (1202) 69.4%	133794 (30113) 72.3%	27013* (27013) 100.0%	...	160806* (49527) 75.8%
55	6400* (1765) 33.8%	...	...	6400* (1765) 32.7%	119631* (42384) 38.7%	...	...	119631* (42384) 29.3%
72	9579 (1392) 46.4%	361* (140) 53.5%	13* (19) 100.0%	9954 (1441) 46.7%	199232 (34060) 52.4%	46568* (18900) 56.6%	10670* (15114) 100.0%	256471 (47860) 54.2%
73	6328 (892) 38.2%	1011 (184) 67.9%	295* (139) 86.4%	7633 (875) 41.5%	169639 (34709) 40.3%	246813 (45291) 70.6%	282814* (113492) 86.0%	699265 (105613) 63.6%
75	12702 (2190) 48.5%	59* (60) 99.7%	...	12761 (2208) 48.6%	211141 (36778) 51.1%	8238* (8380) 100.0%	...	219379 (39143) 52.0%
76	3464* (1080) 35.5%	123* (94) 100.0%	...	3588* (1110) 36.3%	72055* (19586) 40.4%	24341* (19716) 100.0%	...	96396* (31399) 47.5%
80	1636* (597) 57.6%	2047 (254) 94.5%	2061 (304) 100.0%	5745 (660) 81.3%	67180* (19225) 66.1%	515989 (76637) 96.5%	3022676 (359103) 100.0%	3605845 (351421) 98.6%
ALL	217057 (6826) 48.6%	41644 (1022) 84.0%	9179 (398) 97.4%	267880 (7033) 53.0%	6224442 (150908) 56.5%	8480416 (178392) 86.8%	12204591 (503025) 98.0%	26909449 (530961) 80.9%

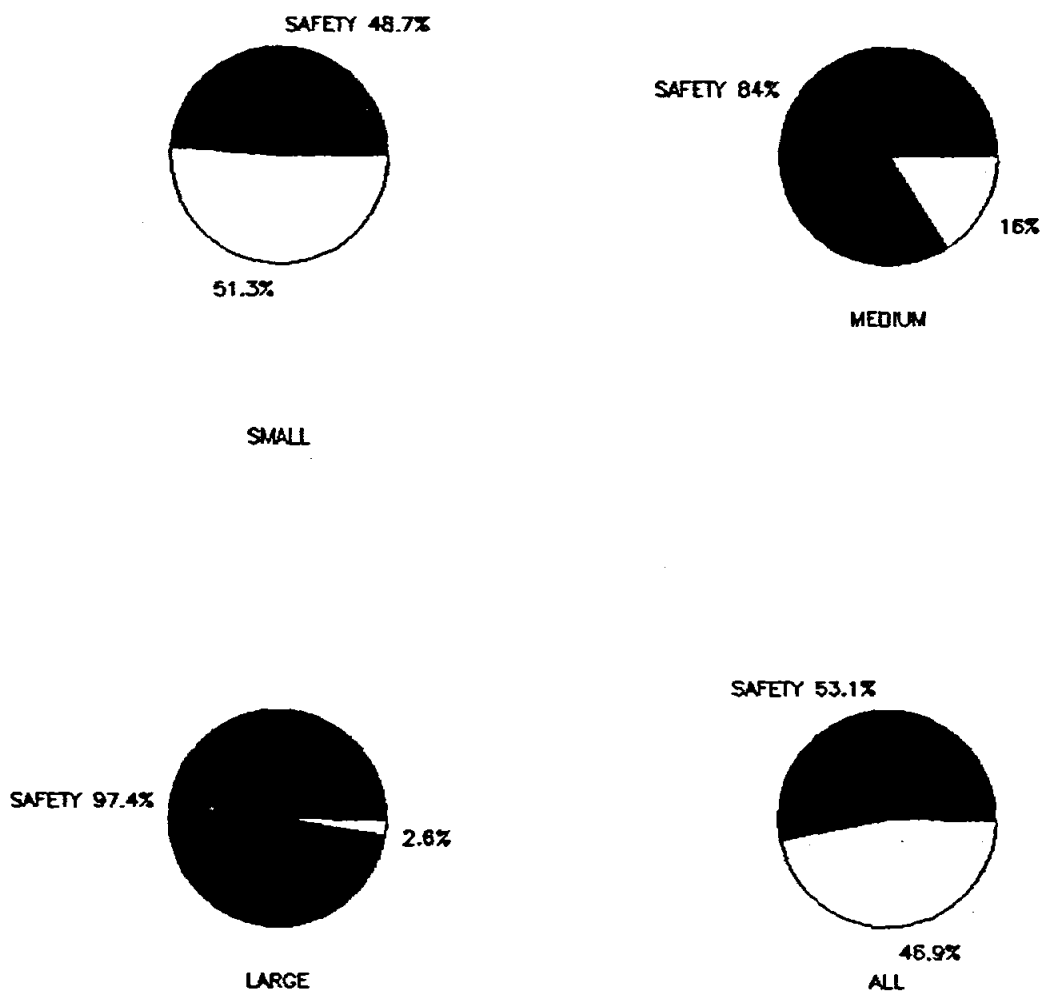
\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE IV - 112**  
**WORKERS IN PLANTS WHICH HAVE PERIODIC**  
**SAFETY INSPECTIONS BY PLANT SIZE**  
**(NOES 1981-1983)**





**FIGURE IV - 113**  
**PLANTS WHICH REGULARLY CONDUCT**  
**SAFETY INSPECTIONS**  
**(NOES 1981-1983)**



**NOES QUESTIONNAIRE ITEM NO. 54**  
**Written Reports Required for Safety Inspections**

**Intent**

The intent of this question was to determine whether all safety inspections of the facility resulted in a written report of the findings.

This item was displayed on the questionnaire as:

54. Are written results of these safety inspections required?

1    Yes  
2    No

**Notes**

This question was asked only of those respondents who indicated that safety inspections were regularly conducted.

Written reports were considered to be reports arising from inspection of a facility, whether positive or negative in nature. They need not have been formal, and would have included handwritten or transcribed oral reports.

**Analysis**

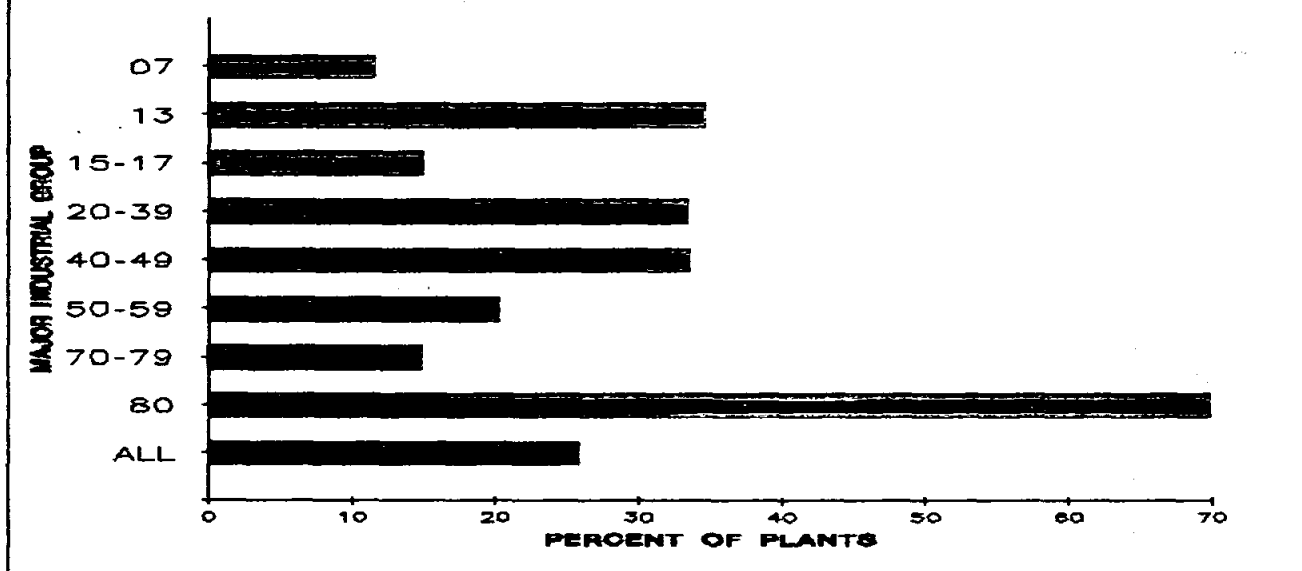
One analysis of the responses to question 54 is presented.

**Response 54.1 - Written reports of safety inspections required**

The estimates of the plants which require written reports of all safety inspections within the facility, and workers in those plants (by number and proportion of the total) are displayed in Figures IV-114, IV-115, IV-116, IV-117, and Tables IV-73 and IV-74.

Figure IV-114	Plants which require written reports of safety inspections (by major industrial group)
Figure IV-115	Plants which require written reports of safety inspections (by 2-digit SIC)
Figure IV-116	Workers in plants which require written reports of safety inspection by plant size
Figure IV-117	Plants which require written reports of safety inspections
Table IV-73	Number and percent of plants and employees in plants which require written reports of safety inspections (by major industrial group)
Table IV-74	Number and percent of plants and employees in plants which require written reports of safety inspections (by 2-digit SIC)

**FIGURE IV - 114**  
**PLANTS WHICH REQUIRE WRITTEN REPORTS**  
**OF SAFETY INSPECTIONS**  
**(NORS 1981-1983)**



NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-73

**NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH**  
**REQUIRE WRITTEN REPORTS OF SAFETY INSPECTIONS**

MAJOR GROUP	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	662* (312) 11.9%	...	...	662* (312) 11.7%	27445* (15220) 26.5%	...	...	27445* (15220) 24.8%
13	2692* (1003) 31.3%	625* (280) 61.3%	46* (52) 100.0%	3363* (1106) 34.8%	72306* (21995) 34.6%	118123* (54160) 67.9%	31383* (35291) 100.0%	221811* (75087) 53.5%
15-17	13012 (1376) 13.8%	1748* (467) 42.2%	110* (60) 45.3%	14870 (1332) 15.1%	445534 (43012) 21.2%	354518* (102394) 48.1%	124983* (42459) 52.9%	925035 (84213) 30.1%
20-39	36002 (2881) 23.5%	22649 (1522) 71.3%	5474 (182) 87.3%	64125 (3196) 33.5%	1550569 (78535) 33.6%	4781567 (300461) 74.9%	7458528 (250869) 90.2%	13790665 (467020) 71.6%
40-49	16085 (1748) 30.3%	3559 (781) 60.9%	338* (104) 72.2%	19982 (2050) 33.6%	622509 (75630) 43.4%	786496 (194577) 68.2%	423692 (84368) 73.8%	1832697 (238890) 58.0%
50-59	11165 (2460) 19.1%	1316* (375) 49.5%	...	12481 (2401) 20.4%	298877 (62319) 26.6%	182183* (50475) 44.6%	...	481061 (77265) 31.4%
70-79	10271 (1904) 14.0%	876 (197) 37.3%	241* (135) 68.2%	11389 (1975) 15.0%	275708 (54635) 19.8%	205096 (45098) 44.2%	238671* (117405) 70.3%	719474 (130309) 32.7%
80	1029* (434) 36.3%	1889 (253) 87.2%	2020 (273) 98.0%	4938 (588) 69.9%	50189* (16239) 49.4%	456277 (73910) 85.4%	2985058 (340832) 98.8%	3491524 (340406) 95.4%
ALL	90918 (4921) 20.2%	32661 (1862) 65.3%	8229 (378) 87.2%	131809 (5247) 25.9%	3343138 (146920) 30.2%	6884259 (389357) 69.8%	11262315 (450613) 90.3%	21489712 (653425) 64.3%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

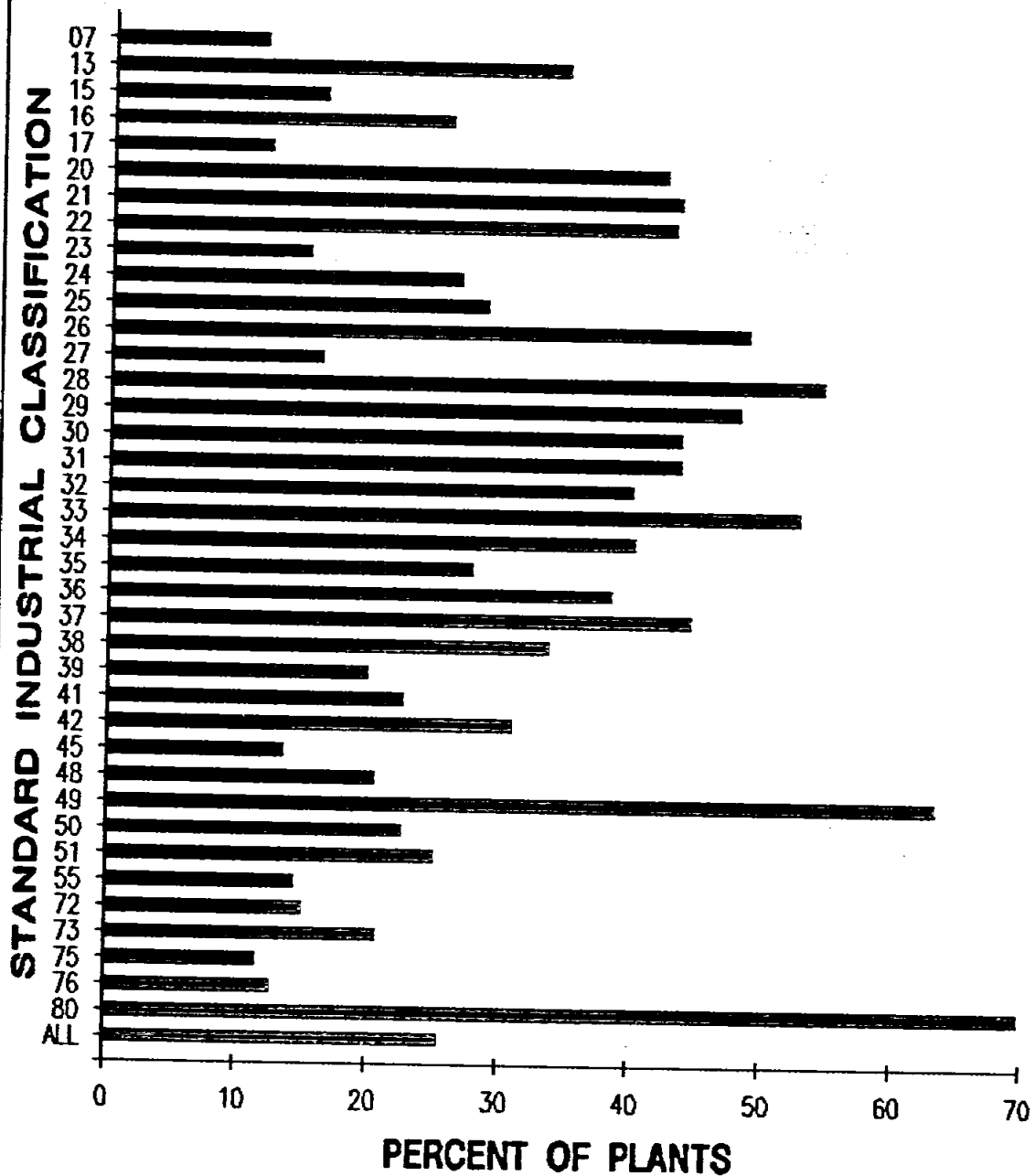
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
REQUIRE WRITTEN REPORTS OF SAFETY INSPECTIONS

SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	662* (312) 11.9%	...	...	662* (312) 11.7%	27445* (15220) 26.5%	...	...	27445* (15220) 24.8%
13	2692* (1003) 31.3%	625* (280) 61.3%	46* (52) 100.0%	3363* (1106) 34.8%	72306* (21995) 34.6%	118123* (54160) 67.9%	31383* (35291) 100.0%	221811* (75087) 53.5%
15	3794 (847) 15.2%	444* (182) 40.1%	54* (25) 39.7%	4292 (857) 16.4%	126463 (22702) 22.5%	69833* (28159) 35.2%	77206* (21590) 57.3%	273502 (46370) 30.5%
16	2517 (622) 22.3%	674* (180) 60.2%	56* (56) 52.4%	3247 (606) 26.0%	88668* (24622) 31.2%	145283* (44379) 69.9%	47776* (37015) 47.2%	281727 (56497) 47.5%
17	6701 (1084) 11.5%	630* (243) 32.8%	...	7331 (1029) 12.2%	230403 (36163) 18.4%	139403* (59010) 42.1%	...	369806 (55216) 23.4%
20	3190 (515) 27.9%	2721 (487) 84.6%	533 (110) 95.4%	6443 (663) 42.4%	145803 (22301) 37.5%	577996 (106719) 85.8%	436908 (82784) 88.8%	1160707 (114953) 74.7%
21	30* (43) 100.0%	...	17* (28) 21.6%	47* (47) 43.5%	1866* (2685) 100.0%	...	45151* (41947) 40.3%	47017* (41262) 41.2%
22	522* (134) 17.8%	1259 (133) 79.3%	296* (81) 98.9%	2076 (180) 43.1%	27699* (9667) 26.1%	286058 (30146) 82.4%	258826* (95559) 99.1%	572583 (94754) 80.2%
23	1084* (308) 8.7%	1078 (153) 34.7%	242* (93) 100.0%	2404 (345) 15.2%	42721* (12551) 10.1%	243932 (39039) 40.0%	208437* (79559) 100.0%	495091 (93885) 39.9%
24	2071 (348) 19.3%	1035 (148) 90.2%	104* (74) 100.0%	3210 (411) 26.8%	98689 (21079) 32.5%	167462 (28043) 91.2%	92355* (52501) 100.0%	358506 (77127) 61.9%
25	629* (234) 15.1%	791 (166) 74.5%	119* (75) 99.6%	1538 (289) 28.8%	19474* (7393) 14.0%	198539 (42485) 77.4%	122998* (62394) 100.0%	341011 (80684) 65.8%
26	1408 (314) 34.2%	1256 (280) 80.0%	214* (73) 100.0%	2878 (386) 48.8%	76448 (13184) 55.5%	235079 (52054) 83.5%	206864* (65220) 100.0%	518391 (88715) 82.8%
27	1999 (474) 11.0%	1078 (229) 57.6%	224* (89) 70.9%	3301 (580) 16.3%	102127* (26321) 21.4%	219335* (56204) 60.8%	254883* (73153) 73.7%	576344 (112335) 48.6%
28	2717 (540) 44.0%	1125 (81) 96.9%	368 (58) 96.9%	4209 (545) 54.6%	103926 (12500) 57.5%	250021 (25692) 95.9%	450302 (97051) 94.5%	804248 (98231) 87.6%
29	318* (203) 31.4%	259* (122) 88.3%	101* (42) 100.0%	677* (258) 48.2%	24252* (15059) 59.2%	52186* (19475) 82.5%	117545* (70259) 100.0%	193983* (81170) 87.5%
30	2385* (624) 35.5%	1094* (357) 71.1%	224* (73) 99.9%	3703 (823) 43.7%	88840 (20495) 39.5%	222932* (80385) 75.7%	233647* (72848) 100.0%	545419 (108786) 72.4%
31	273* (201) 29.3%	372* (129) 65.3%	22* (20) 87.3%	667* (280) 43.7%	7775* (5242) 31.2%	90859* (32958) 67.1%	11650* (10428) 74.4%	110284* (37765) 62.7%
32	2933 (607) 33.3%	893 (152) 88.2%	184* (71) 99.9%	4010 (632) 40.1%	105683 (19074) 44.6%	191633 (33593) 91.7%	128993* (49687) 100.0%	426309 (49041) 74.1%
33	1606 (272) 38.8%	1204 (175) 82.0%	327 (60) 97.1%	3137 (328) 52.8%	80564 (15712) 58.2%	264577 (40933) 85.1%	614374 (79969) 98.9%	959515 (90662) 89.6%

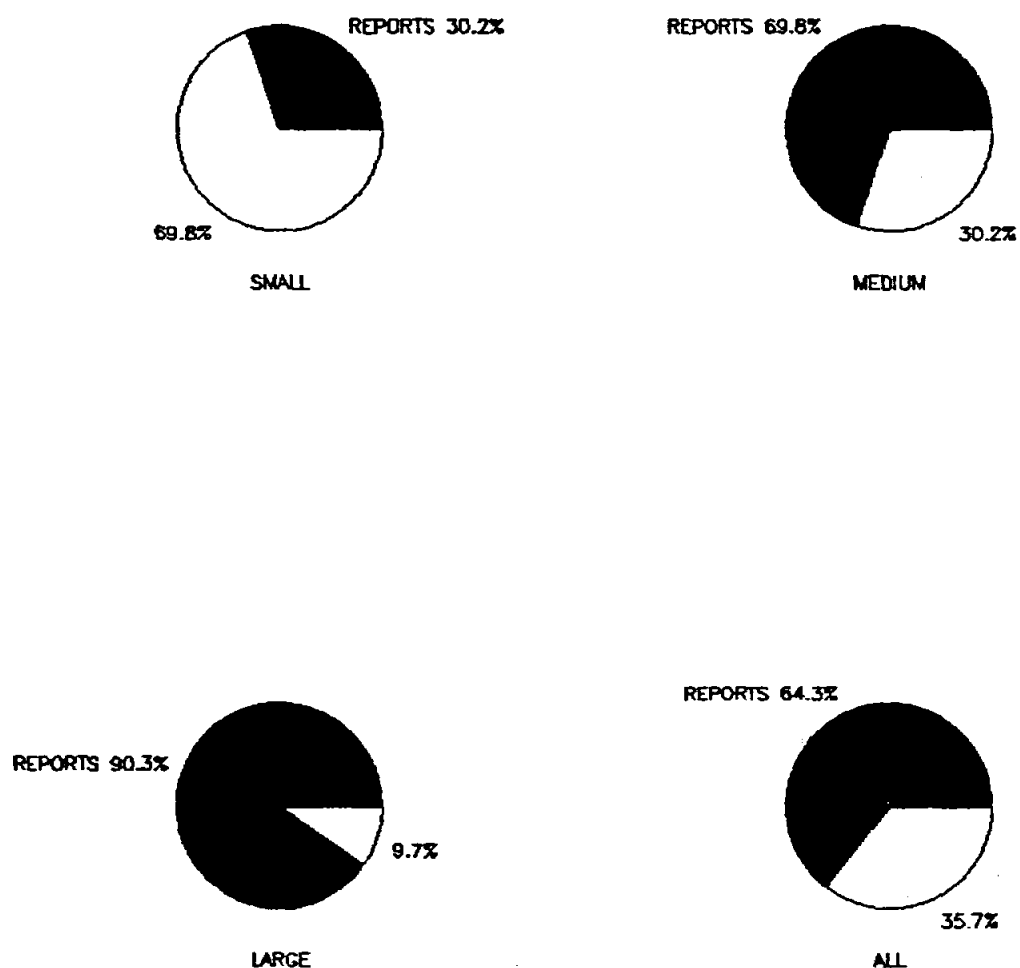
SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	6356 (927) 34.3%	2189 (203) 70.1%	323 (79) 93.4%	8868 (971) 40.3%	245665 (24625) 44.3%	464484 (35283) 77.8%	336688* (100855) 95.9%	1046837 (106907) 69.7%
35	4002 (868) 17.7%	2760 (257) 81.1%	720 (79) 91.8%	7482 (895) 27.9%	186888 (28440) 30.8%	539794 (32338) 81.6%	1052352 (143641) 94.6%	1779034 (154908) 74.7%
36	1652* (623) 23.3%	1742 (162) 64.9%	679 (136) 86.3%	4073 (648) 38.5%	72093* (23159) 31.3%	409310 (33071) 74.1%	1078296 (171570) 91.2%	1559700 (156197) 79.3%
37	1349* (460) 33.9%	806 (167) 67.7%	335 (70) 80.5%	2489 (523) 44.6%	54270* (20241) 42.7%	181617 (39811) 75.9%	1313865 (210465) 86.8%	1549752 (208014) 82.4%
38	404* (151) 15.0%	552 (108) 57.7%	416* (139) 99.9%	1372 (274) 33.8%	28262* (10045) 27.0%	87394 (19039) 45.0%	460397* (129998) 100.0%	576054 (136633) 75.9%
39	1076* (507) 16.4%	437* (844) 54.7%	26* (19) 7.7%	1539* (1002) 20.0%	37522* (9902) 22.6%	98359* (196241) 65.8%	33998* (22428) 16.2%	169879* (194888) 32.4%
41	1120* (448) 25.4%	...	...	1120* (448) 22.7%	51164* (22333) 43.5%	...	...	51164* (22333) 25.7%
42	5580 (1081) 27.9%	1074* (276) 72.5%	35* (21) 43.3%	6690 (1044) 31.0%	198687 (42483) 40.7%	188289* (48689) 72.7%	44236* (34127) 59.1%	431212 (53746) 52.5%
45	239* (184) 7.4%	194* (194) 32.8%	110* (52) 75.1%	543* (267) 13.6%	16093* (11185) 20.8%	55275* (55275) 50.6%	195862* (58739) 74.1%	267229* (74531) 59.2%
48	2720* (1033) 18.5%	487* (229) 54.0%	19* (16) 56.8%	3227* (1037) 20.6%	116985* (51089) 27.5%	97634* (38714) 55.4%	37029* (29526) 52.8%	251648* (78521) 37.4%
49	4807* (1381) 58.5%	1523* (541) 81.8%	173* (99) 99.8%	6502* (1631) 63.4%	201247* (53549) 74.7%	381698* (149615) 89.7%	146565* (65566) 100.0%	729510 (181915) 86.7%
50	5979 (1427) 19.7%	1316* (375) 73.0%	...	7295 (1475) 22.7%	165338* (42130) 26.2%	182183* (50475) 64.3%	...	347522 (66656) 38.0%
51	2358* (809) 25.9%	...	...	2358* (809) 25.2%	62620* (22540) 33.8%	...	...	62620* (22540) 29.5%
55	2828* (1255) 14.9%	...	...	2828* (1255) 14.5%	70918* (35446) 22.9%	...	...	70918* (35446) 17.4%
72	3078* (1157) 14.9%	150* (88) 22.3%	...	3228* (1174) 15.1%	87450* (27973) 23.0%	18070* (10480) 22.0%	...	105519* (29715) 22.3%
73	2889 (588) 17.4%	689 (149) 46.3%	241* (135) 70.8%	3820 (642) 20.8%	97893* (33472) 23.2%	174354 (38036) 49.9%	238671* (117405) 72.6%	510918 (114097) 46.4%
75	3078* (1124) 11.8%	...	...	3078* (1124) 11.7%	56213* (17513) 13.6%	...	...	56213* (17513) 13.3%
76	1227* (649) 12.6%	36* (45) 29.4%	...	1263* (658) 12.8%	34152* (15392) 19.1%	12672* (15755) 52.1%	...	46824* (23058) 23.1%
80	1029* (434) 36.3%	1889 (253) 87.2%	2020 (273) 98.0%	4938 (588) 69.9%	50189* (16239) 49.4%	456277 (73910) 85.4%	2985058 (340832) 98.8%	3491524 (340406) 95.4%
ALL	89300 (4927) 20.0%	32406 (1119) 65.4%	8229 (431) 87.3%	129935 (5070) 25.7%	3304805 (127017) 30.0%	6829748 (198625) 69.9%	11262315 (486499) 90.4%	21396868 (484330) 64.3%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

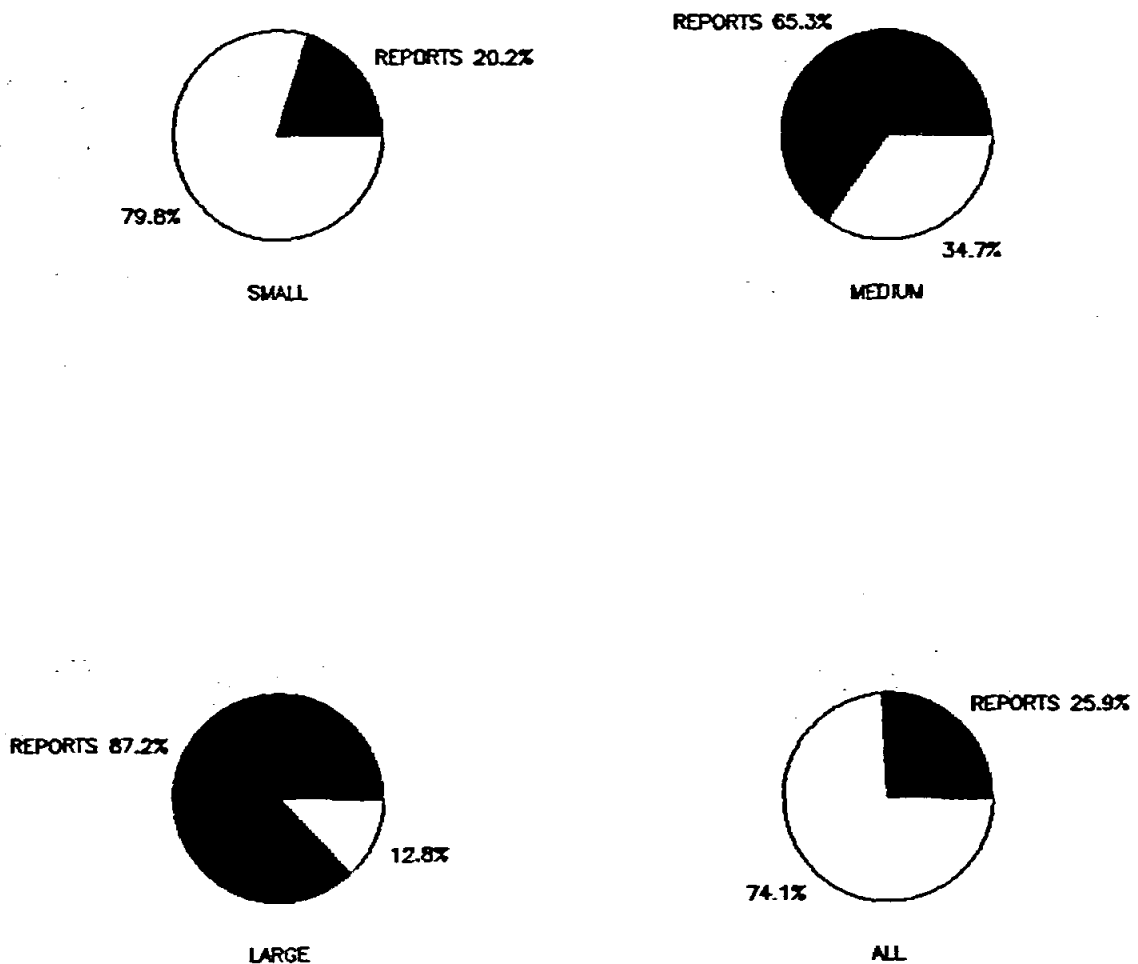
**FIGURE IV - 115**  
**PLANTS WHICH REQUIRE WRITTEN REPORTS**  
**OF SAFETY INSPECTIONS**  
**(NOES 1981-1983)**



**FIGURE IV - 116**  
**WORKERS IN PLANTS WHICH REQUIRE WRITTEN**  
**REPORTS OF SAFETY INSPECTIONS BY PLANT SIZE**  
**(NOES 1981-1983)**



**FIGURE IV - 117**  
**PLANTS WHICH REQUIRE WRITTEN**  
**REPORTS OF SAFETY INSPECTIONS**  
**(NOES 1981-1983)**





NOES QUESTIONNAIRE ITEM NQ. 55  
Results of Safety Inspections Routinely Made Available to Workers

Intent

The intent of this question was to determine whether affected employees are routinely provided with the results of safety inspections.

This item was displayed on the questionnaire as:

55. Are the results of the safety inspections posted or otherwise made routinely available to affected employees?

1 Yes  
2 No

Notes

"Routinely available" safety inspections results were considered to be those reports provided to affected employees as a normal practice established by management policy. These reports can be written or oral or displayed in areas commonly used by workers, as long as they convey the results of a safety inspection.

An "affected employee" was a worker whose occupational environment was included in a safety inspection.

Posting government inspections or any other inspection not initiated by management did not meet the intent of this question.

Analysis

One analysis of the responses to question 55 is presented.

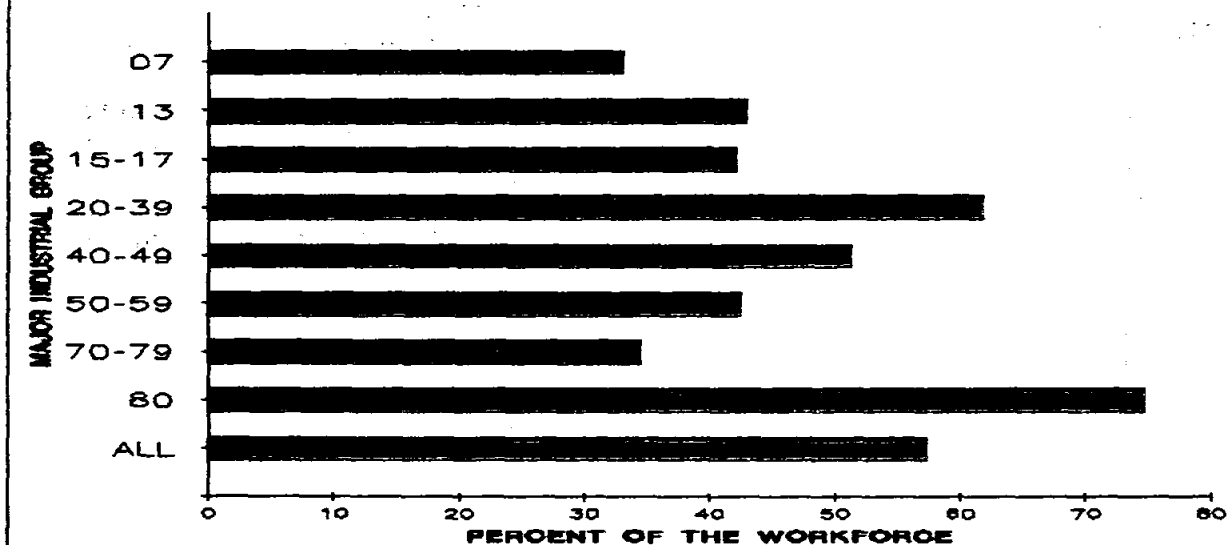
Response 55.1 - Safety inspection reports made available to workers

The estimates of the plants which routinely make safety inspection reports available to their employees, and workers in those plants (by number and proportion of the total) are displayed in Figures IV-118, IV-119, IV-120, IV-121, IV-122, and IV-123, and Tables IV-75 and IV-76.

Figure IV-118	Workers in plants which make safety inspection reports available to employees (by major industrial group)
Figure IV-119	Workers in plants which make safety inspection reports available to employees (by 2-digit SIC)
Figure IV-120	Plants which make safety inspection reports available to employees (by major industrial group)
Figure IV-121	Plants which make safety inspection reports available to employees (by 2-digit SIC)

<b>Figure IV-122</b>	<b>Workers in plants which provide safety inspection reports to employees by plant size</b>
<b>Figure IV-123</b>	<b>Plants which provide safety inspection reports to employees</b>
<b>Table IV-75</b>	<b>Number and percent of plants and employees in plants which make reports of safety inspections available to workers (by major industrial group)</b>
<b>Table IV-76</b>	<b>Number and percent of plants and employees in plants which make reports of safety inspections available to workers (by 2-digit SIC)</b>

**FIGURE IV - 118**  
**WORKERS IN PLANTS WHICH MAKE SAFETY**  
**INSPECTION REPORTS AVAILABLE TO EMPLOYEES**  
**(NOES 1981-1983)**



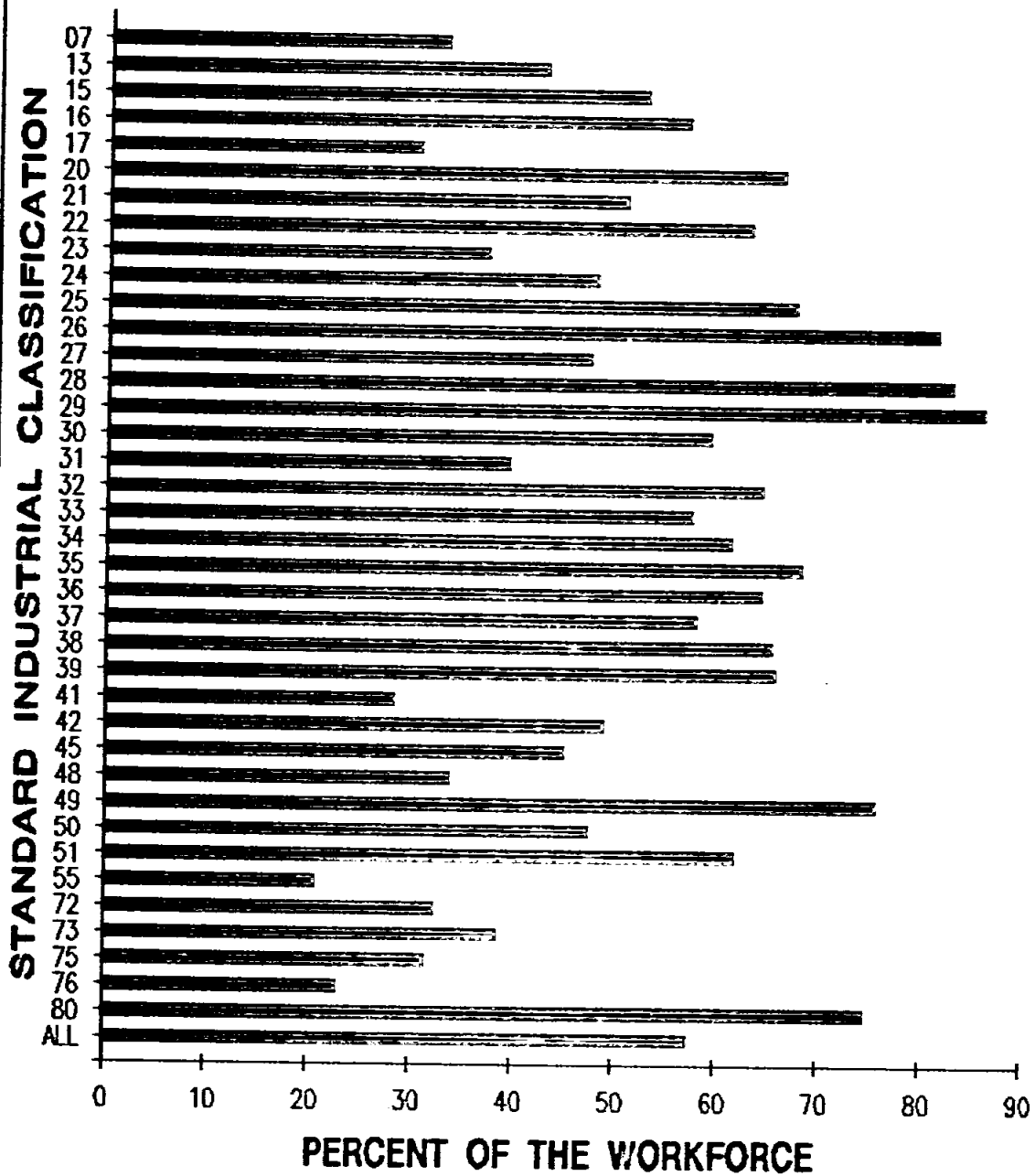
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-75

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 MAKE REPORTS OF SAFETY INSPECTIONS AVAILABLE TO WORKERS

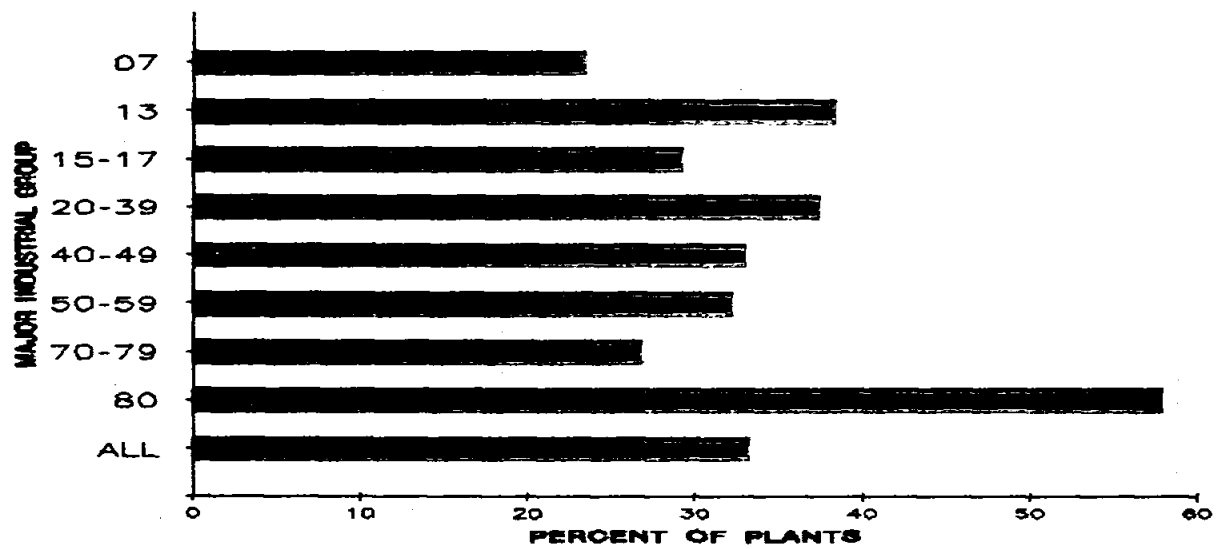
MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	1325* (679) 23.8%	...	...	1325* (679) 23.5%	36891* (21268) 35.6%	...	...	36891* (21268) 33.3%
13	3375* (1217) 39.3%	294* (119) 28.9%	46* (52) 100.0%	3716* (1229) 38.5%	87713* (27544) 42.0%	59260* (25998) 34.1%	31383* (35291) 100.0%	178355* (55391) 43.1%
15-17	26408 (1683) 28.0%	2440 (429) 58.9%	133* (117) 54.8%	28980 (1658) 29.4%	707905 (50065) 33.7%	462618 (92666) 62.8%	127627* (81082) 54.1%	1298151 (117189) 42.3%
20-39	47243 (2872) 30.8%	19612 (1428) 61.8%	4898 (309) 78.1%	71753 (3387) 37.5%	1678217 (64790) 36.4%	4030695 (302258) 63.2%	6216075 (358587) 75.2%	11924988 (411764) 61.9%
40-49	16126 (1343) 30.3%	3226 (711) 55.2%	345* (108) 73.8%	19697 (1556) 33.1%	579816 (57858) 40.4%	652221* (164789) 56.6%	392804 (80071) 68.5%	1624841 (193144) 51.4%
50-59	18359 (2629) 31.4%	1385* (488) 52.1%	...	19745 (2701) 32.3%	441008 (63610) 39.2%	211541* (72794) 51.7%	...	652548 (101343) 42.6%
70-79	19285 (2566) 26.4%	846 (199) 36.1%	238* (133) 67.3%	20370 (2594) 26.9%	374732 (59748) 26.9%	172142 (41938) 37.1%	214220* (112578) 63.1%	761093 (126445) 34.6%
80	934* (412) 32.9%	1544 (199) 71.3%	1621 (225) 78.7%	4099 (536) 58.0%	43461* (15095) 42.8%	373498 (55203) 69.9%	2318379 (271015) 76.7%	2735338 (276811) 74.8%
ALL	133057 (5338) 29.6%	29347 (1749) 58.7%	7281 (438) 77.1%	169685 (5738) 33.4%	3949742 (138227) 35.6%	5961975 (371326) 60.5%	9300488 (478475) 74.6%	19212205 (571832) 57.5%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE IV - 119**  
**WORKERS IN PLANTS WHICH MAKE SAFETY**  
**INSPECTION REPORTS AVAILABLE TO EMPLOYEES**  
**(NOES 1981-1983)**



**FIGURE IV - 120**  
**PLANTS WHICH MAKE SAFETY INSPECTION**  
**REPORTS AVAILABLE TO EMPLOYEES**  
**(NOES 1981-1983)**



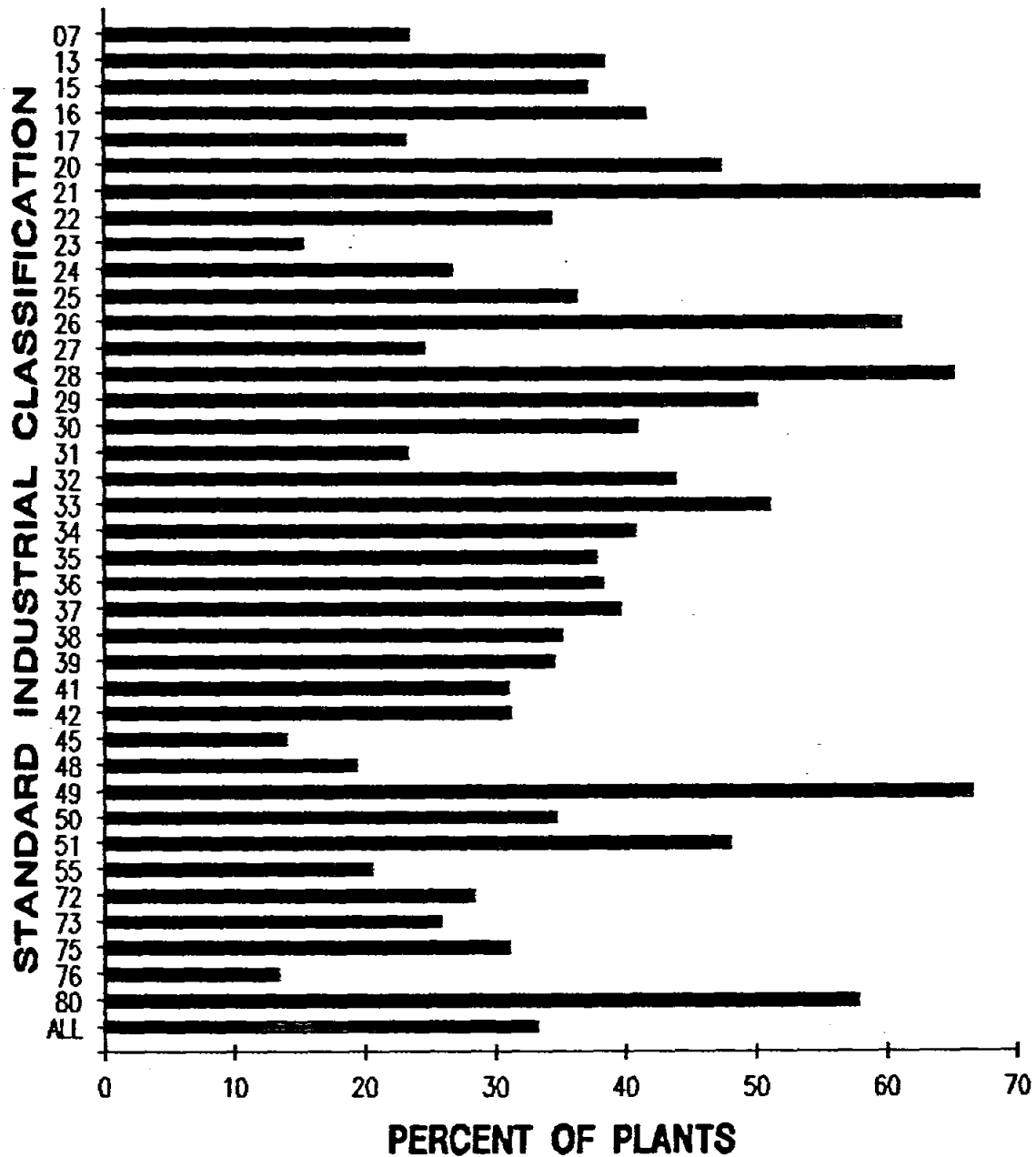
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
MAKE REPORTS OF SAFETY INSPECTIONS AVAILABLE TO WORKERS

SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	1325* (679) 23.8%	...	...	1325* (679) 23.5%	36891* (21268) 35.6%	...	...	36891* (21268) 33.3%
13	3375* (1217) 39.3%	294* (119) 28.9%	46* (52) 100.0%	3716* (1229) 38.5%	87713* (27544) 42.0%	59260* (25998) 34.1%	31383* (35291) 100.0%	178355* (55391) 43.1%
15	8784 (1112) 35.3%	861 (210) 77.8%	94* (97) 69.6%	9739 (1163) 37.2%	237005 (27067) 42.1%	145209* (37613) 73.3%	91821* (67997) 68.1%	474035 (81578) 52.9%
16	4362 (848) 38.7%	819 (183) 73.2%	39* (48) 36.2%	5220 (867) 41.7%	132456 (30846) 46.6%	169917* (42609) 81.8%	35806* (31376) 35.4%	338180 (67597) 57.0%
17	13261 (1353) 22.8%	759* (273) 39.6%	...	14021 (1376) 23.3%	338443 (38783) 27.0%	147492* (58802) 44.5%	...	485935 (75976) 30.7%
20	4506 (596) 39.5%	2241 (375) 69.7%	464* (133) 83.0%	7210 (642) 47.5%	171301 (23593) 44.1%	476807 (83219) 70.8%	381457* (99665) 77.6%	1029565 (108792) 66.3%
21	30* (43) 100.0%	...	43* (34) 54.5%	73* (51) 67.3%	1866* (2685) 100.0%	...	56325* (44772) 50.2%	58191* (44417) 51.0%
22	475* (189) 16.2%	929 (130) 58.5%	257* (78) 85.9%	1661 (231) 34.5%	20309* (7913) 19.2%	209444 (32771) 60.3%	221651* (74573) 84.9%	451403 (76770) 63.2%
23	1181* (380) 9.4%	1026 (188) 33.1%	242* (93) 100.0%	2449 (424) 15.4%	37903* (17234) 8.9%	218275 (38524) 35.8%	208437* (79559) 100.0%	464615 (84340) 37.4%
24	2461 (474) 23.0%	653 (144) 56.9%	104* (74) 100.0%	3218 (517) 26.9%	84492 (16370) 27.8%	102184 (19521) 55.7%	92355* (52501) 100.0%	279031 (60746) 48.1%
25	1081* (410) 26.0%	748 (181) 70.4%	119* (75) 99.6%	1947* (501) 36.4%	38293* (17739) 27.5%	189044 (46539) 73.7%	122998* (62394) 100.0%	350335* (91539) 67.6%
26	2168* (677) 52.7%	1233 (220) 78.6%	205* (70) 95.6%	3606 (740) 61.2%	82452 (18690) 59.9%	232447 (50360) 82.6%	196027* (60369) 94.8%	510925 (88584) 81.6%
27	3541 (631) 19.5%	1297 (178) 69.2%	189* (86) 59.7%	5027 (659) 24.8%	139337 (26106) 29.1%	243427 (48816) 67.4%	181768* (68733) 52.6%	564532 (95522) 47.6%
28	3692 (582) 59.8%	1002 (113) 86.3%	339 (69) 89.3%	5033 (632) 65.3%	107320 (11432) 59.4%	229923 (30110) 88.2%	424859* (108411) 89.2%	762103 (119377) 83.0%
29	345* (232) 34.2%	259* (122) 88.3%	101* (42) 100.0%	705* (286) 50.2%	21404* (13620) 52.2%	52186* (19475) 82.5%	117545* (70259) 100.0%	191134* (80273) 86.2%
30	2411* (638) 35.9%	922* (300) 60.0%	147* (72) 65.7%	3480 (816) 41.1%	83192 (18666) 37.0%	179263* (56134) 60.9%	185926* (77041) 79.6%	448381 (82852) 59.5%
31	135* (80) 14.5%	199* (100) 35.0%	22* (20) 87.3%	356* (135) 23.4%	6795* (4435) 27.3%	51205* (26957) 37.8%	11650* (10428) 74.4%	69650* (31310) 39.6%
32	3496 (643) 39.7%	763 (159) 75.4%	144* (60) 78.0%	4402 (699) 44.0%	115037 (18379) 48.5%	159196 (34409) 76.2%	96654* (43227) 74.9%	370886 (53692) 64.5%
33	1890 (391) 45.7%	923 (200) 62.9%	229 (51) 68.0%	3042 (482) 51.2%	78566 (14641) 56.7%	197993 (34732) 63.6%	340660 (64535) 54.8%	617219 (62815) 57.6%

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	6751 (916) 36.5%	1974 (203) 63.2%	271* (73) 78.3%	8996 (878) 40.9%	236840 (21342) 42.7%	398699 (40030) 66.8%	288572* (83930) 82.2%	924111 (101385) 61.5%
35	7042 (913) 31.1%	2436 (179) 71.5%	683 (84) 87.1%	10161 (903) 37.9%	232654 (24417) 38.3%	463866 (29744) 70.2%	931342 (128677) 83.7%	1627861 (137531) 68.4%
36	2134* (749) 30.0%	1471 (177) 54.8%	460 (112) 58.5%	4065 (825) 38.4%	87759* (25082) 38.1%	343249 (33804) 62.1%	837263 (186830) 70.8%	1268271 (193930) 64.5%
37	1330* (472) 33.5%	692 (79) 58.2%	200 (45) 48.1%	2222 (497) 39.8%	53425* (21188) 42.1%	128490 (25104) 53.7%	910786 (164672) 60.2%	1092701 (177823) 58.1%
38	649* (374) 24.1%	442* (125) 46.2%	342* (121) 82.2%	1433* (415) 35.3%	31811* (11295) 30.4%	65761* (19288) 33.8%	400433* (121004) 87.0%	498004 (122479) 65.6%
39	1927* (665) 29.4%	402* (780) 50.4%	338* (216) 100.0%	2667* (1059) 34.7%	47462* (13873) 28.6%	89236* (180997) 59.7%	209369* (120490) 100.0%	346068* (166885) 66.0%
41	1532* (573) 34.7%	...	...	1532* (573) 31.1%	56913* (21941) 48.4%	...	...	56913* (21941) 28.6%
42	5774 (1055) 28.8%	943* (295) 63.6%	68* (52) 82.6%	6785 (1048) 31.4%	194272 (41081) 39.8%	155313* (47102) 60.0%	54925* (46095) 73.4%	404511 (62900) 49.2%
45	384* (200) 11.8%	75* (75) 12.8%	101* (48) 69.0%	561* (210) 14.1%	19710* (10449) 25.4%	7769* (7769) 7.1%	176638* (60475) 66.8%	204117* (58857) 45.3%
48	2386* (939) 16.2%	643* (161) 71.3%	19* (16) 56.8%	3048* (951) 19.5%	75331* (26564) 17.7%	116603* (37646) 66.1%	37029* (29526) 52.8%	228963* (58357) 34.1%
49	5317 (1299) 64.7%	1398* (520) 75.1%	124* (84) 71.8%	6840 (1526) 66.7%	201881 (50166) 74.9%	330273* (145489) 77.6%	106202* (52554) 72.5%	638355* (170199) 75.9%
50	10043 (1431) 33.1%	1148* (408) 63.7%	...	11191 (1508) 34.8%	251123 (40913) 39.8%	184528* (68295) 65.1%	...	435651 (85634) 47.7%
51	4272 (883) 46.9%	237* (237) 100.0%	...	4509 (1020) 48.2%	104659* (26973) 56.6%	27013* (27013) 100.0%	...	131672* (46207) 62.1%
55	4045* (1456) 21.4%	...	...	4045* (1456) 20.7%	85225* (35528) 27.6%	...	...	85225* (35528) 20.9%
72	5753 (1368) 27.9%	319* (135) 47.2%	...	6071 (1409) 28.5%	113126* (28654) 29.8%	41058* (18191) 49.9%	...	154184 (35378) 32.6%
73	4046 (805) 24.4%	492* (132) 33.0%	238* (133) 69.8%	4776 (808) 26.0%	93979* (27507) 22.3%	118411* (33691) 33.9%	214220* (112578) 65.1%	426610* (114200) 38.8%
75	8187* (2057) 31.3%	...	...	8187* (2057) 31.2%	133503 (31199) 32.3%	...	...	133503 (31199) 31.7%
76	1300* (643) 13.3%	36* (45) 29.4%	...	1336* (663) 13.5%	34124* (14519) 19.1%	12672* (15755) 52.1%	...	46796* (24825) 23.1%
80	934* (412) 32.9%	1544 (199) 71.3%	1621 (225) 78.7%	4099 (536) 58.0%	43461* (15095) 42.8%	373498 (55203) 69.9%	2318379 (271015) 76.7%	2735338 (276811) 74.8%
ALL	132324 (5532) 29.6%	29207 (919) 58.9%	7265 (262) 77.1%	168795 (5826) 33.4%	3918033 (138944) 35.5%	5928802 (186731) 60.7%	9291483 (447588) 74.6%	19138317 (427419) 57.5%

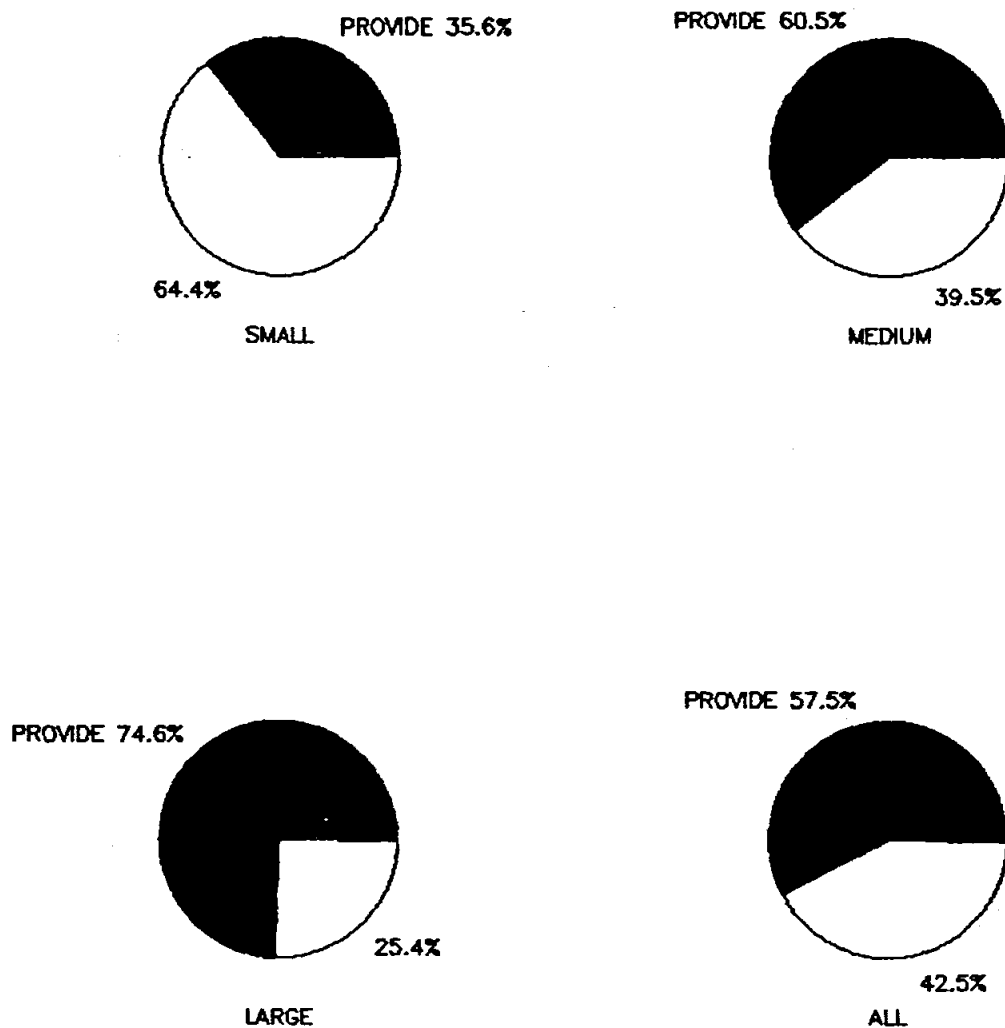
\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE IV - 121**  
**PLANTS WHICH MAKE SAFETY INSPECTION**  
**REPORTS AVAILABLE TO EMPLOYEES**  
**(NOES 1981-1983)**

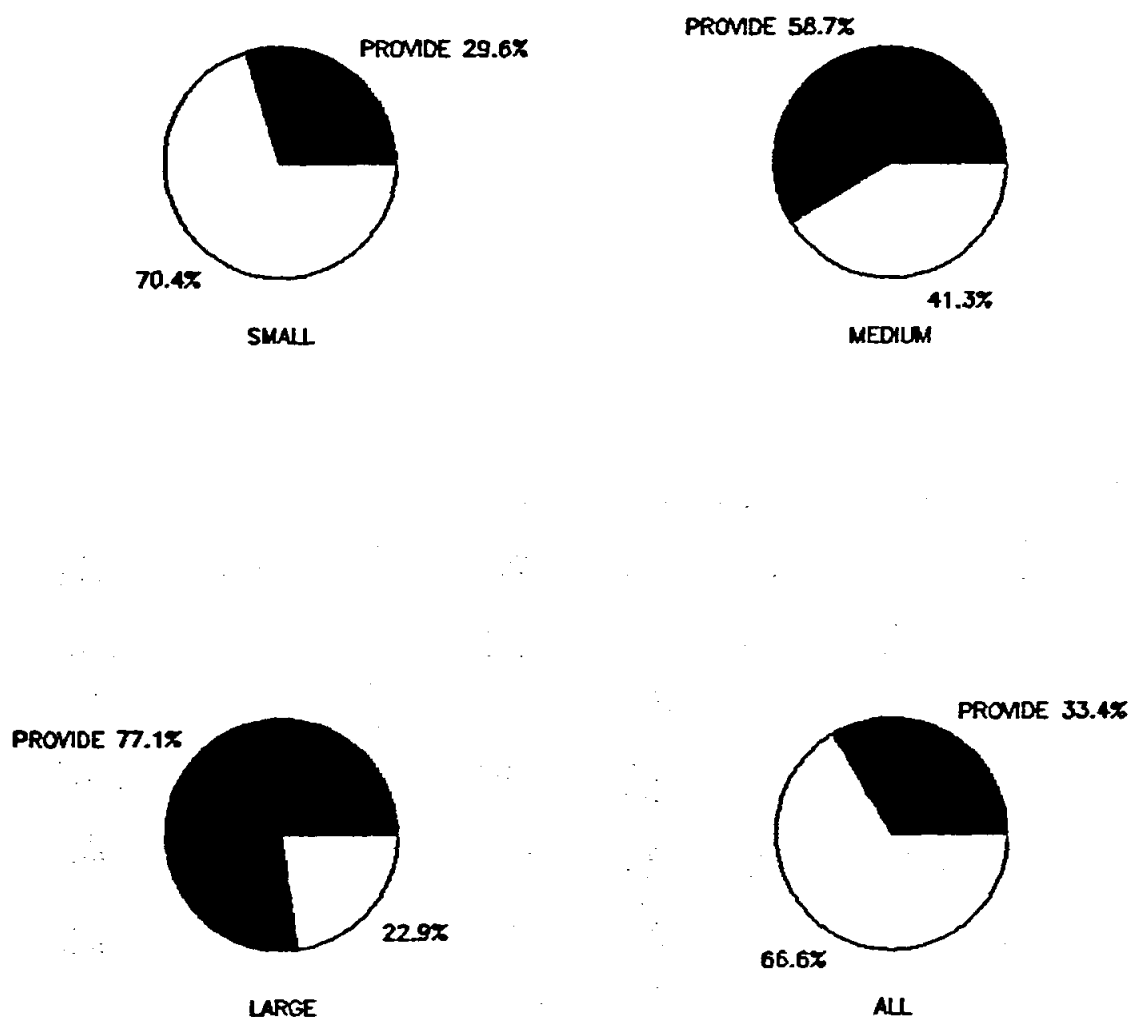




**FIGURE IV - 122**  
**WORKERS IN PLANTS WHICH PROVIDE SAFETY**  
**INSPECTION REPORTS TO EMPLOYEES BY PLANT SIZE**  
**(NOES 1981-1983)**



**FIGURE IV - 123**  
**PLANTS WHICH PROVIDE SAFETY INSPECTION**  
**REPORTS TO EMPLOYEES**  
**(NOES 1981-1983)**



**NOES QUESTIONNAIRE ITEM NO. 56**  
**Plants Which Have a Regular Preventive Maintenance Program**

**Intent**

The intent of this question was to determine whether the facility had a regularly scheduled preventive maintenance program.

This item was displayed on the questionnaire as:

56. Do you have a regularly scheduled preventive maintenance program?

- 1 Yes
- 2 No

**Notes**

A preventive maintenance program was considered to be a management-initiated process of inspection and corrective action or repair intended to precede any actual failure of the physical structure or related equipment of the facility.

A program which involved preventive inspections at intervals of three or more years did not meet the criteria for a regularly scheduled preventive maintenance program.

**Analysis**

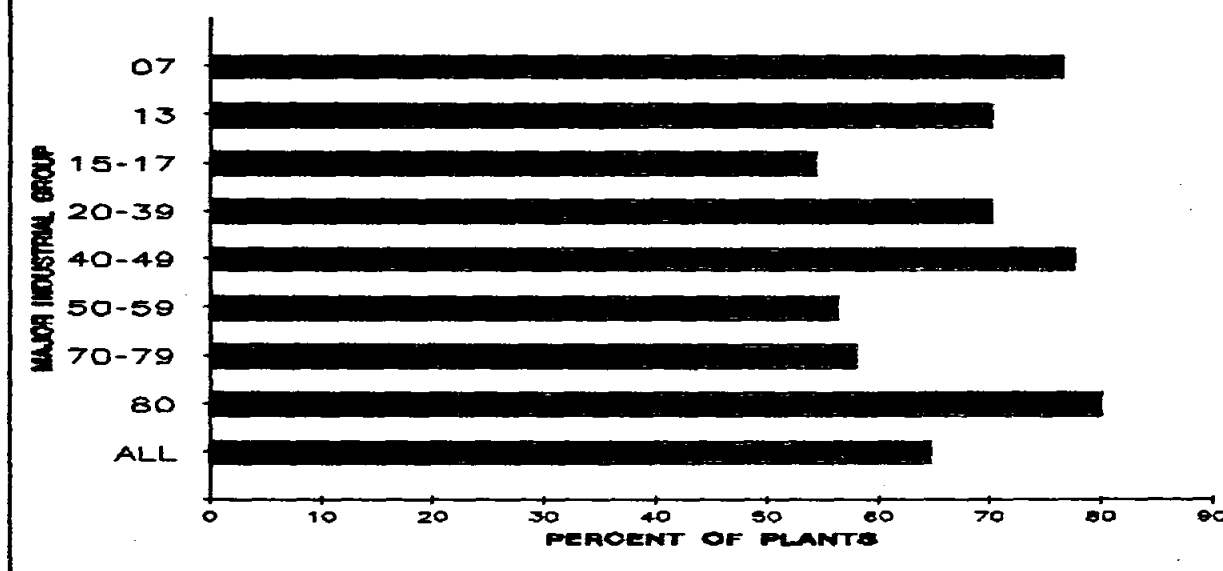
One analysis of the responses to question 56 is presented

Response 56.1 - Existence of a regularly scheduled preventive maintenance program

The estimates of the plants which have a regularly scheduled program for the preventive inspection of the facility and its equipment, and workers in those plants (by number and proportion of the total) are displayed in Figures IV-124, IV-125, IV-126, and IV-127, and Tables IV-77 and IV-78.

Figure IV-124	Plants which have a regularly scheduled preventive maintenance program (by major industrial group)
Figure IV-125	Plants which have a regularly scheduled preventive maintenance program (by 2-digit SIC)
Figure IV-126	Workers in plants which have a preventive maintenance program by plant size
Figure IV-127	Plants which have a scheduled preventive maintenance program
Table IV-77	Number and percent of plants and employees in plants which have a regularly scheduled preventive maintenance program (by major industrial group)
Table IV-78	Number and percent of plants and employees in plants which have a regularly scheduled preventive maintenance program (by 2-digit SIC)

**FIGURE IV - 124**  
**PLANTS WHICH HAVE A REGULARLY SCHEDULED**  
**PREVENTIVE MAINTENANCE PROGRAM**  
**(NOES 1981-1983)**



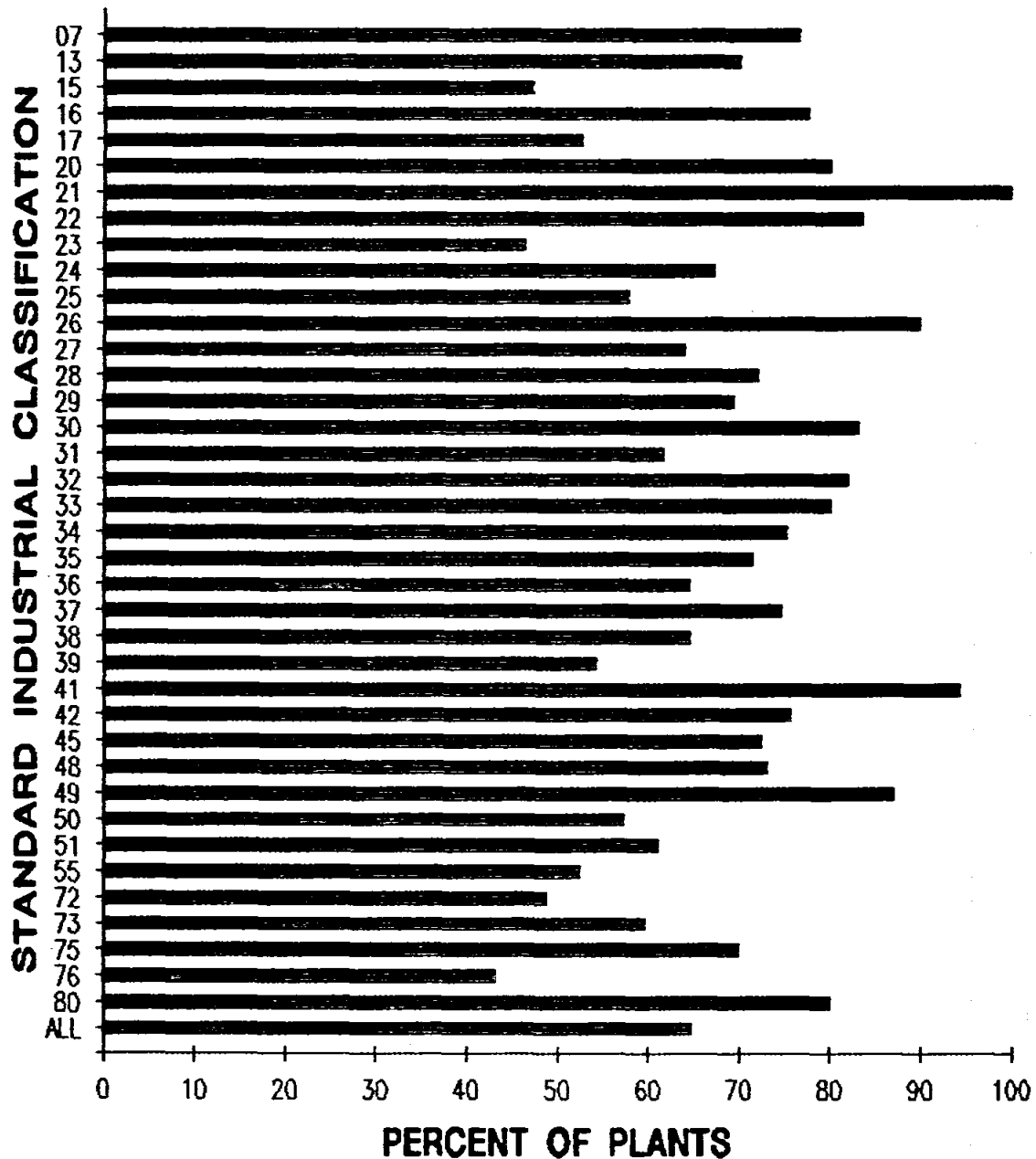
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-77

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 HAVE A REGULARLY SCHEDULED PREVENTIVE MAINTENANCE PROGRAM

MAJOR GROUP	PLANTS			TOTAL	EMPLOYEES			TOTAL
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)		SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	
07	4257* (1285) 76.5%	70* (67) 100.0%	...	4327* (1268) 76.8%	81088* (25991) 78.2%	7009* (6680) 100.0%	...	88097* (24752) 79.6%
13	5995 (1474) 69.7%	765* (286) 75.1%	46* (52) 100.0%	6806 (1664) 70.4%	146839 (33445) 70.3%	133042* (46661) 76.5%	31383* (35291) 100.0%	311264* (93720) 75.1%
15-17	50630 (2605) 53.7%	3086 (476) 74.4%	178* (119) 73.5%	53894 (2604) 54.6%	1238766 (57589) 59.0%	577450 (95574) 78.3%	182994* (91835) 77.5%	1999210 (134999) 65.1%
20-39	102024 (3503) 66.6%	26554 (1724) 83.6%	5825 (215) 92.9%	134403 (4134) 70.3%	3233687 (84076) 70.1%	5424547 (327931) 85.0%	7862371 (260958) 95.1%	16520605 (510735) 85.8%
40-49	40401 (2533) 76.0%	5388 (981) 92.2%	468* (134) 100.0%	46257 (3123) 77.8%	1166734 (97005) 81.4%	1073811 (216660) 93.1%	573743 (106392) 100.0%	2814288 (284905) 89.0%
50-59	32501 (2688) 55.7%	2016* (561) 75.8%	...	34518 (2684) 56.5%	720214 (65284) 64.1%	303574* (85969) 74.3%	...	1023788 (114157) 66.8%
70-79	42048 (3088) 57.5%	1830 (260) 78.0%	269* (138) 76.0%	44147 (3142) 58.2%	834403 (66288) 59.9%	359272 (51521) 77.3%	264910* (113487) 78.0%	1458586 (127398) 66.4%
80	1894* (607) 66.7%	1766 (263) 81.5%	2009 (315) 97.5%	5670 (600) 80.2%	81519 (18741) 80.2%	448227 (75551) 83.9%	2969976 (368653) 98.3%	3499721 (361883) 95.7%
ALL	279751 (6814) 62.3%	41475 (2167) 82.9%	8796 (446) 93.2%	330021 (7445) 64.9%	7503250 (174919) 67.7%	8326932 (426134) 84.5%	11885378 (487731) 95.3%	27715559 (727917) 83.0%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE IV - 125**  
**PLANTS WHICH HAVE A REGULARLY SCHEDULED**  
**PREVENTIVE MAINTENANCE PROGRAM**  
**(NOES 1981-1983)**



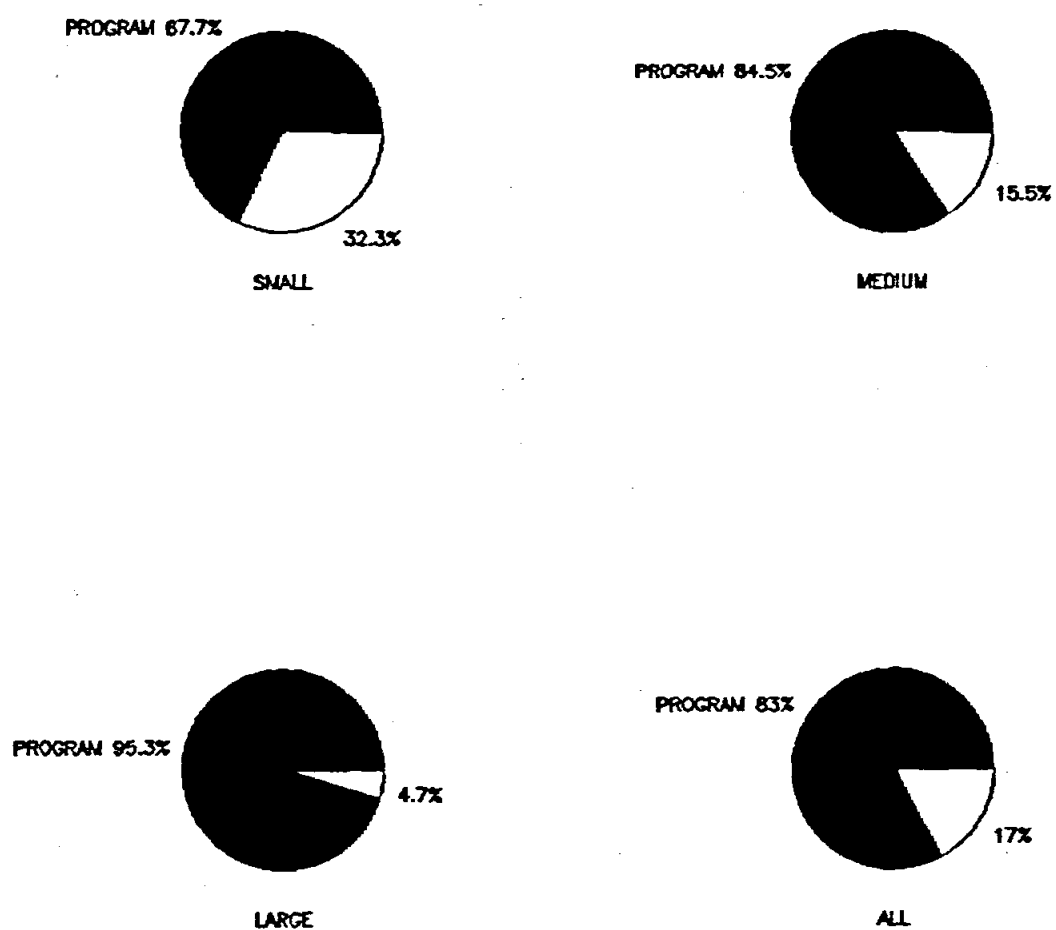
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
HAVE A REGULARLY SCHEDULED PREVENTIVE MAINTENANCE PROGRAM

SIC CODE	PLANTS SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	EMPLOYEES SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	4257* (1285) 76.5%	70* (67) 100.0%	...	4327* (1268) 76.8%	81088* (25991) 78.2%	7009* (6680) 100.0%	...	88097* (24752) 79.6%
13	5995 (1474) 69.7%	765* (286) 75.1%	46* (52) 100.0%	6806 (1664) 70.4%	146839 (33445) 70.3%	133042* (46661) 76.5%	31383* (35291) 100.0%	311264* (93720) 75.1%
15	11293 (1293) 45.3%	1019 (204) 92.1%	106* (98) 78.8%	12419 (1342) 47.5%	275694 (28615) 49.0%	182342 (40941) 92.0%	103397* (67194) 76.7%	561434 (75343) 62.7%
16	8587 (1396) 76.1%	1074 (206) 96.0%	72* (48) 66.9%	9733 (1335) 77.8%	222407 (47750) 78.3%	203272 (45391) 97.8%	79597* (46726) 78.6%	505276 (74531) 85.2%
17	30749 (2080) 52.9%	992* (352) 51.7%	...	31741 (2196) 52.9%	740664 (39922) 59.2%	191836* (73159) 57.9%	...	932500 (82691) 58.9%
20	8587 (792) 75.2%	3055 (454) 95.0%	559 (121) 100.0%	12202 (819) 80.3%	312096 (17641) 80.3%	649225 (105481) 96.4%	491775 (104930) 100.0%	1453096 (105601) 93.5%
21	30* (43) 100.0%	...	79* (56) 99.6%	109* (65) 100.0%	1866* (2685) 100.0%	...	112133* (67572) 100.0%	113999* (66861) 100.0%
22	2327 (404) 79.4%	1409 (146) 88.7%	295* (80) 98.7%	4032 (428) 83.7%	83505 (10500) 78.8%	317274 (25009) 91.4%	258387* (94273) 99.0%	659165 (89349) 92.3%
23	5340 (921) 42.7%	1890 (286) 60.9%	147* (68) 60.7%	7377 (1024) 46.5%	197458 (35392) 46.6%	395081 (53185) 64.8%	143575* (61571) 68.9%	736114 (82290) 59.3%
24	7024 (858) 65.6%	931 (160) 81.1%	104* (74) 100.0%	8059 (870) 67.4%	221071 (25041) 72.8%	137120 (26850) 74.7%	92355* (52501) 100.0%	450545 (81654) 77.7%
25	2139 (421) 51.4%	925 (186) 87.1%	30* (31) 25.2%	3094 (406) 57.9%	69291 (14436) 49.8%	225787 (50059) 88.0%	50849* (32821) 41.3%	345927 (56021) 66.7%
26	3701 (827) 90.0%	1390 (239) 88.6%	214* (73) 100.0%	5305 (851) 90.0%	116865 (22994) 84.9%	247960 (49418) 88.1%	206864* (65220) 100.0%	571690 (88906) 91.3%
27	10977 (1088) 60.6%	1762 (167) 94.1%	298* (113) 94.2%	13037 (1084) 64.2%	320652 (32071) 67.1%	334283 (44106) 92.6%	326636 (81330) 94.5%	981571 (105571) 82.8%
28	4189 (580) 67.9%	1002 (122) 86.4%	380 (63) 100.0%	5571 (589) 72.2%	123053 (12524) 68.1%	233313 (31357) 89.4%	476341 (101388) 100.0%	832707 (107885) 90.7%
29	584* (289) 57.8%	293* (125) 100.0%	101* (42) 100.0%	978* (351) 69.6%	34715* (17013) 84.7%	63255* (21394) 100.0%	117545* (70259) 100.0%	215515* (82016) 97.2%
30	5476 (921) 81.6%	1370* (362) 89.1%	208* (78) 92.7%	7053 (1036) 83.3%	181632 (22287) 80.7%	267875* (79555) 91.0%	224823* (75600) 96.2%	674331 (108965) 89.5%
31	475* (233) 51.0%	444* (115) 78.0%	25* (24) 100.0%	944* (299) 61.9%	16239* (6684) 65.2%	98972* (27608) 73.1%	15664* (16901) 100.0%	130875* (34005) 74.4%
32	7132 (1175) 81.1%	903 (162) 89.2%	184* (71) 99.9%	8219 (1215) 82.2%	211020 (17459) 89.0%	191744 (33909) 91.8%	128993* (49687) 100.0%	531757 (47222) 92.5%
33	3197 (384) 77.3%	1240 (171) 84.5%	327 (55) 97.0%	4764 (403) 80.2%	113200 (12790) 81.8%	270447 (38306) 86.9%	609910 (74715) 98.1%	993557 (83804) 92.8%

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	13517 (1044) 73.0%	2749 (210) 88.1%	320* (80) 92.6%	16586 (1012) 75.4%	405481 (18387) 73.1%	530089 (37150) 88.8%	332357* (99526) 94.7%	1267927 (118602) 84.4%
35	15541 (1196) 68.6%	2984 (179) 87.6%	702 (79) 89.5%	19227 (1208) 71.6%	408417 (22492) 67.3%	583932 (24164) 88.3%	1020084 (137469) 91.7%	2012433 (139335) 84.5%
36	4131 (734) 58.1%	1959 (214) 73.0%	759 (161) 96.4%	6848 (735) 64.8%	172559 (20020) 74.9%	409444 (53410) 74.1%	1155014 (191838) 97.7%	1737017 (206285) 88.4%
37	2896 (702) 72.9%	890 (182) 74.8%	395 (90) 94.9%	4181 (737) 74.9%	94585 (16672) 74.5%	199774 (39524) 83.5%	1461127 (228808) 96.5%	1755486 (220612) 93.4%
38	1533* (474) 57.0%	740 (115) 77.3%	361* (126) 86.7%	2633 (500) 64.8%	61322 (14131) 58.6%	148253 (28131) 76.3%	428568* (127647) 93.1%	638144 (146583) 84.0%
39	3227 (690) 49.2%	618* (1180) 77.5%	338* (216) 100.0%	4183* (1389) 54.4%	88661 (16518) 53.4%	120718* (231074) 80.8%	209369* (120490) 100.0%	418748* (220509) 79.8%
41	4155 (1015) 94.0%	510* (178) 100.0%	...	4665 (1077) 94.6%	113291 (25274) 96.3%	81542* (35755) 100.0%	...	194833* (48774) 97.8%
42	14905 (1935) 74.4%	1369 (291) 92.4%	82* (54) 99.5%	16356 (1957) 75.8%	383692 (51225) 78.7%	233984 (46306) 90.4%	74830* (49333) 100.0%	692506 (58300) 84.3%
45	2151* (770) 66.4%	590* (397) 99.9%	147* (57) 100.0%	2888* (838) 72.6%	57964* (20678) 74.8%	109332* (75829) 100.0%	264255* (77656) 100.0%	431551 (102028) 95.7%
48	10603 (1710) 72.1%	808 (168) 89.6%	34* (21) 99.0%	11445 (1745) 73.2%	324542 (74003) 76.2%	155308 (37668) 88.1%	70083* (43687) 100.0%	549934 (92049) 81.8%
49	7077 (1655) 86.1%	1699* (556) 91.2%	173* (99) 99.8%	8948 (1936) 87.3%	246278 (57811) 91.4%	404704* (151048) 95.1%	146565* (65566) 100.0%	797547 (190186) 94.8%
50	16697 (1860) 55.0%	1779* (483) 98.7%	...	18476 (2014) 57.5%	410330 (55669) 65.1%	276561* (82009) 97.6%	...	686891 (111770) 75.2%
51	5494 (1033) 60.3%	237* (237) 100.0%	...	5731 (1138) 61.3%	115332 (27375) 62.3%	27013* (27013) 100.0%	...	142345* (45437) 67.1%
55	10311 (2063) 54.5%	...	...	10311 (2063) 52.7%	194552 (44409) 63.0%	...	...	194552 (44409) 47.7%
72	9779 (1660) 47.4%	675* (190) 100.0%	...	10455 (1698) 49.0%	214216 (33010) 56.4%	82220* (24190) 100.0%	...	296436 (37219) 62.7%
73	9673 (1609) 58.4%	1059 (187) 71.1%	269* (138) 78.9%	11001 (1658) 59.8%	236110 (35959) 56.0%	256141 (45767) 73.2%	264910* (113487) 80.5%	757162 (124441) 68.8%
75	18355 (2921) 70.1%	59* (60) 99.7%	...	18413 (2925) 70.2%	295896 (52191) 71.6%	8238* (8380) 100.0%	...	304134 (52690) 72.2%
76	4241 (954) 43.5%	36* (45) 29.4%	...	4277 (970) 43.3%	88181 (18763) 49.4%	12672* (15755) 52.1%	...	100854* (27954) 49.7%
80	1894* (607) 66.7%	1766 (263) 81.5%	2009 (315) 97.5%	5670 (600) 80.2%	81519 (18741) 80.2%	448227 (75551) 83.9%	2969976 (368653) 98.3%	3499721 (361883) 95.7%
ALL	278241 (8225) 62.3%	41110 (1021) 83.0%	8779 (418) 93.2%	328131 (418) 64.9%	7462282 (149622) 67.7%	8253597 (163959) 84.4%	11876372 (490896) 95.3%	27592252 (567187) 83.0%

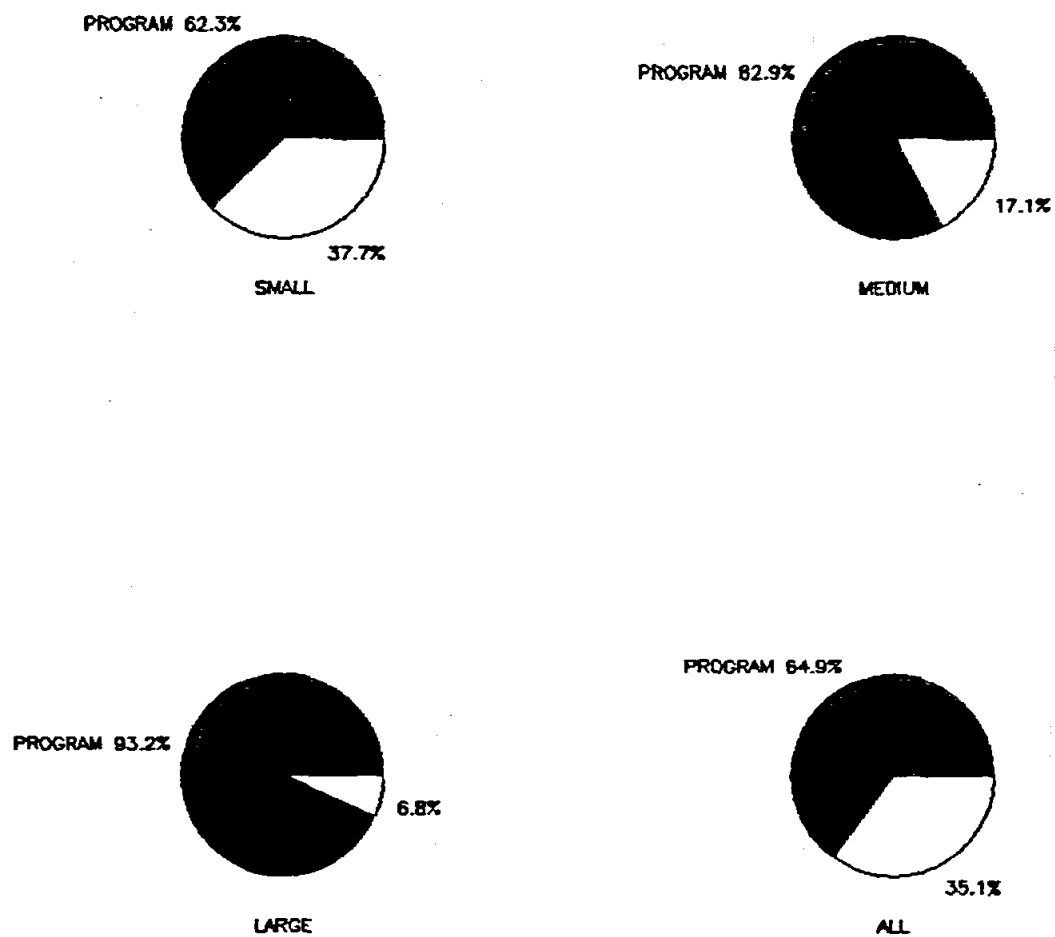
\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE IV - 126**  
**WORKERS IN PLANTS WHICH HAVE A PREVENTIVE**  
**MAINTENANCE PROGRAM BY PLANT SIZE**  
**(NOES 1981-1983)**





**FIGURE IV - 127**  
**PLANTS WHICH HAVE A SCHEDULED**  
**PREVENTIVE MAINTENANCE PROGRAM**  
**(NOES 1981-1983)**



**NOES QUESTIONNAIRE ITEM NO. 57**  
**Regularly Scheduled Safety Training Programs for Workers**

**Item**

The intent of this question was to determine if the facility had a regularly scheduled formal safety training program for workers.

This item was displayed on the questionnaire as:

57. Do you have a regularly scheduled formal safety training program for your employees?

1    Yes  
2    No

**Notes**

A safety training program was considered to be one which was devoted to the recognition, evaluation, and control of safety hazards. It might include such subjects as: recognition of hazards presented by unguarded machinery, inadequate fire protection, and procedures to follow in case of an accident.

Programs which are informal, not initiated by management, concerned only with first aid procedures, or voluntary on the part of the employee did not meet the criteria for safety training. After-accident discussions or seminars were also excluded.

**Analysis**

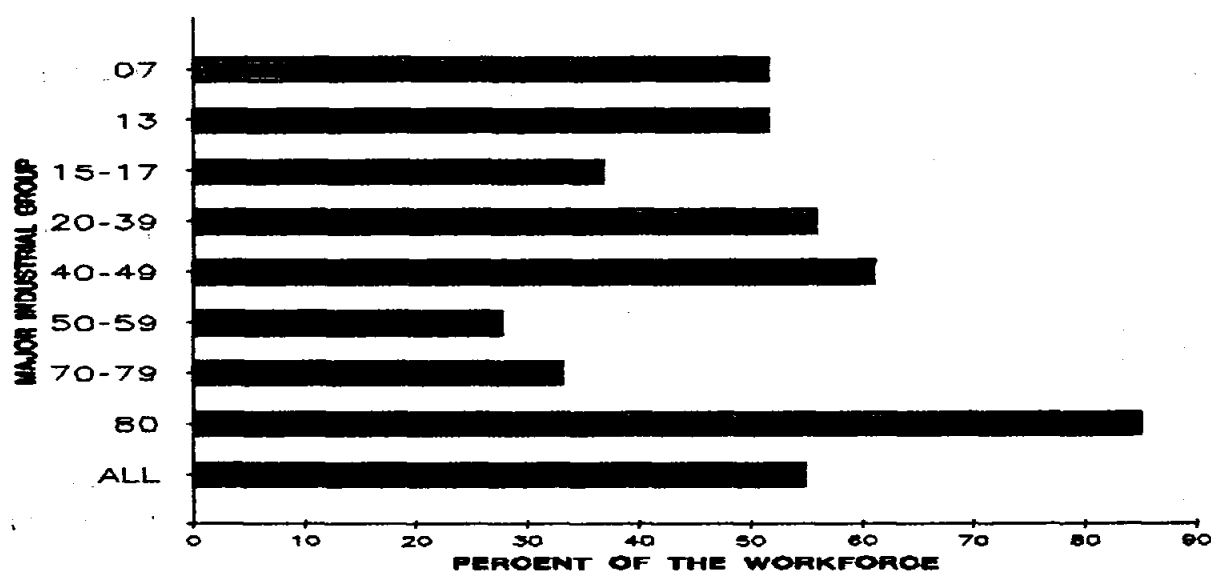
One analysis of the responses to question 57 is presented.

**Response 57.1 - Existence of regularly scheduled safety training**

The estimates of the plants which have a regularly scheduled formal safety training program, and workers in those plants (by number and proportion of the total) are displayed in Figures IV-128, IV-129, IV-130, IV-131, IV-132, and IV-133, and Tables IV-79 and IV-80.

Figure IV-128	Workers in plants with a safety training program (by major industrial group)
Figure IV-129	Workers in plants with a safety training program (by 2-digit SIC)
Figure IV-130	Plants which provide a safety training program (by major industrial group)
Figure IV-131	Plants which provide a safety training program (by 2-digit SIC)
Figure IV-132	Workers in plants which have a formal safety training program by plant size
Figure IV-133	Plants which have a formal safety training program
Table IV-79	Number and percent of plants and employees in plants which have a regularly scheduled safety training program (by major industrial group)
Table IV-80	Number and percent of plants and employees in plants which have a regularly scheduled safety training program (by 2-digit SIC)

**FIGURE IV - 128**  
**WORKERS IN PLANTS WITH A SAFETY TRAINING PROGRAM**  
**(NOES 1981-1983)**



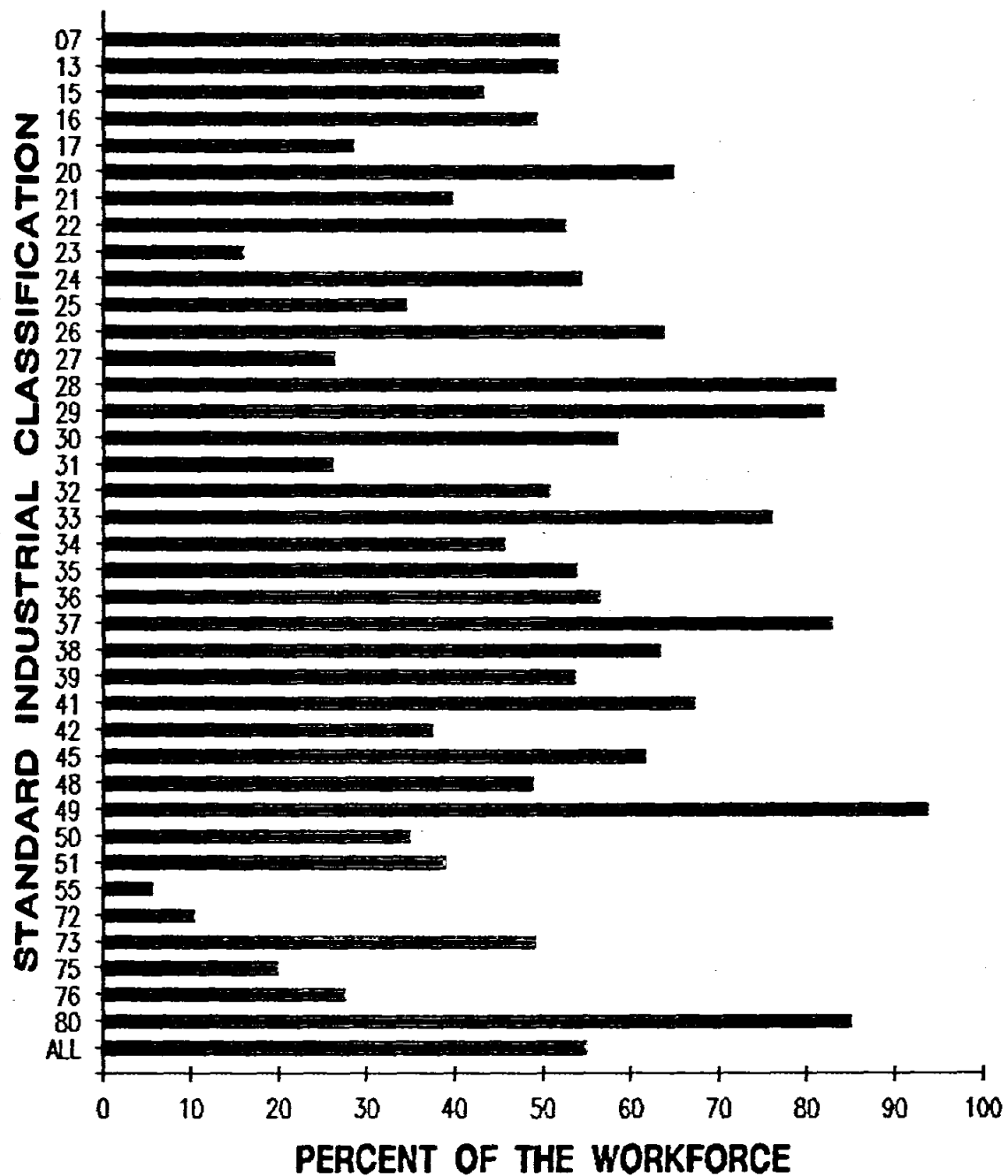
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-79

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 HAVE A REGULARLY SCHEDULED SAFETY TRAINING PROGRAM

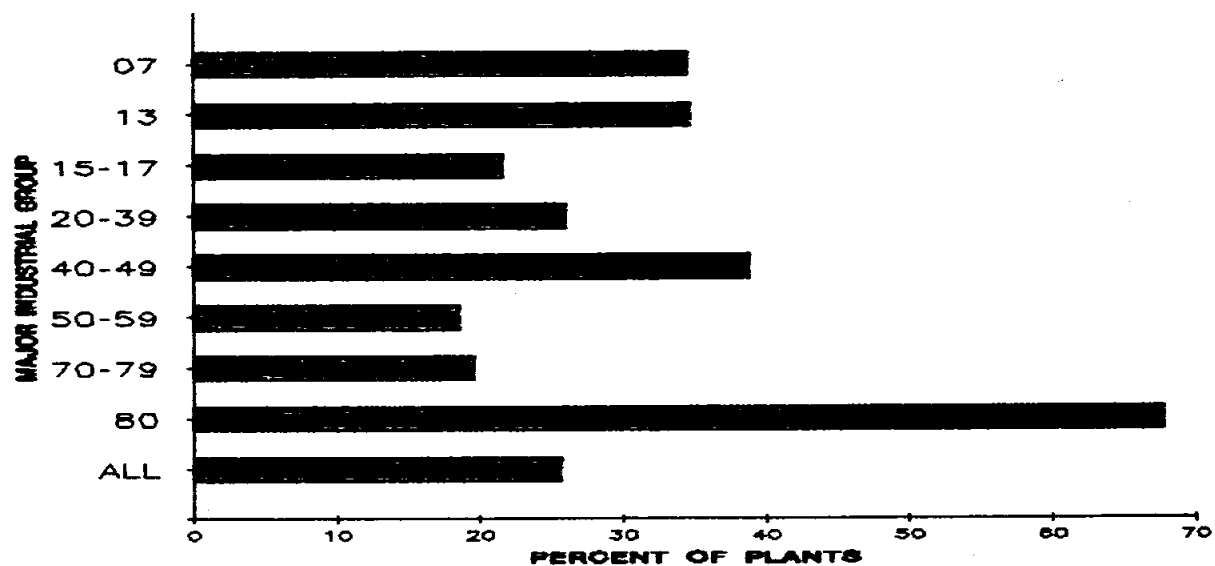
MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	1885* (647) 33.9%	70* (67) 100.0%	...	1955* (629) 34.7%	50402* (23214) 48.6%	7009* (6680) 100.0%	...	57411* (22027) 51.9%
13	2769* (1126) 32.2%	558* (247) 54.7%	46* (52) 100.0%	3373* (1186) 34.9%	72037* (21275) 34.5%	111082* (49229) 63.9%	31383* (35291) 100.0%	214502* (74309) 51.8%
15-17	19280 (1638) 20.4%	2088 (414) 50.4%	174* (120) 71.8%	21542 (1714) 21.8%	585150 (47932) 27.9%	379543 (80356) 51.5%	170606* (83834) 72.3%	1135298 (101243) 37.0%
20-39	30812 (1987) 20.1%	14748 (1023) 46.4%	4371 (415) 69.7%	49931 (2500) 26.1%	1197432 (58326) 25.9%	3127588 (230785) 49.0%	6474962 (293059) 78.3%	10799983 (368059) 56.1%
40-49	18810 (1816) 35.4%	3979 (783) 68.1%	380* (123) 81.1%	23168 (1977) 39.0%	633793 (81933) 44.2%	848322 (200187) 73.6%	455684* (115389) 79.4%	1937799 (282283) 61.3%
50-59	10396 (1627) 17.8%	1086* (345) 40.9%	...	11482 (1624) 18.8%	249730 (37715) 22.2%	177659* (61442) 43.5%	...	427389 (77922) 27.9%
70-79	13941 (2397) 19.1%	805 (172) 34.3%	247* (127) 69.8%	14993 (2404) 19.8%	285370 (55140) 20.5%	198815 (41935) 42.8%	248958* (105894) 73.3%	733143 (114815) 33.4%
80	1367* (527) 48.1%	1674 (229) 77.3%	1760 (280) 85.4%	4800 (576) 67.9%	59743* (17667) 58.8%	399756 (61956) 74.8%	2659327 (357729) 88.0%	3118826 (356756) 85.2%
ALL	99259 (4504) 22.1%	25008 (1449) 50.0%	6977 (547) 73.9%	131244 (4863) 25.8%	3133658 (134830) 28.3%	5249773 (334117) 53.2%	10040920 (496644) 80.5%	18424351 (614767) 55.1%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE IV – 129**  
**WORKERS IN PLANTS WITH A SAFETY TRAINING PROGRAM**  
 (NOES 1981-1993)



**FIGURE IV - 130**  
**PLANTS WHICH PROVIDE A SAFETY TRAINING PROGRAM**  
**(NOES 1981-1983)**



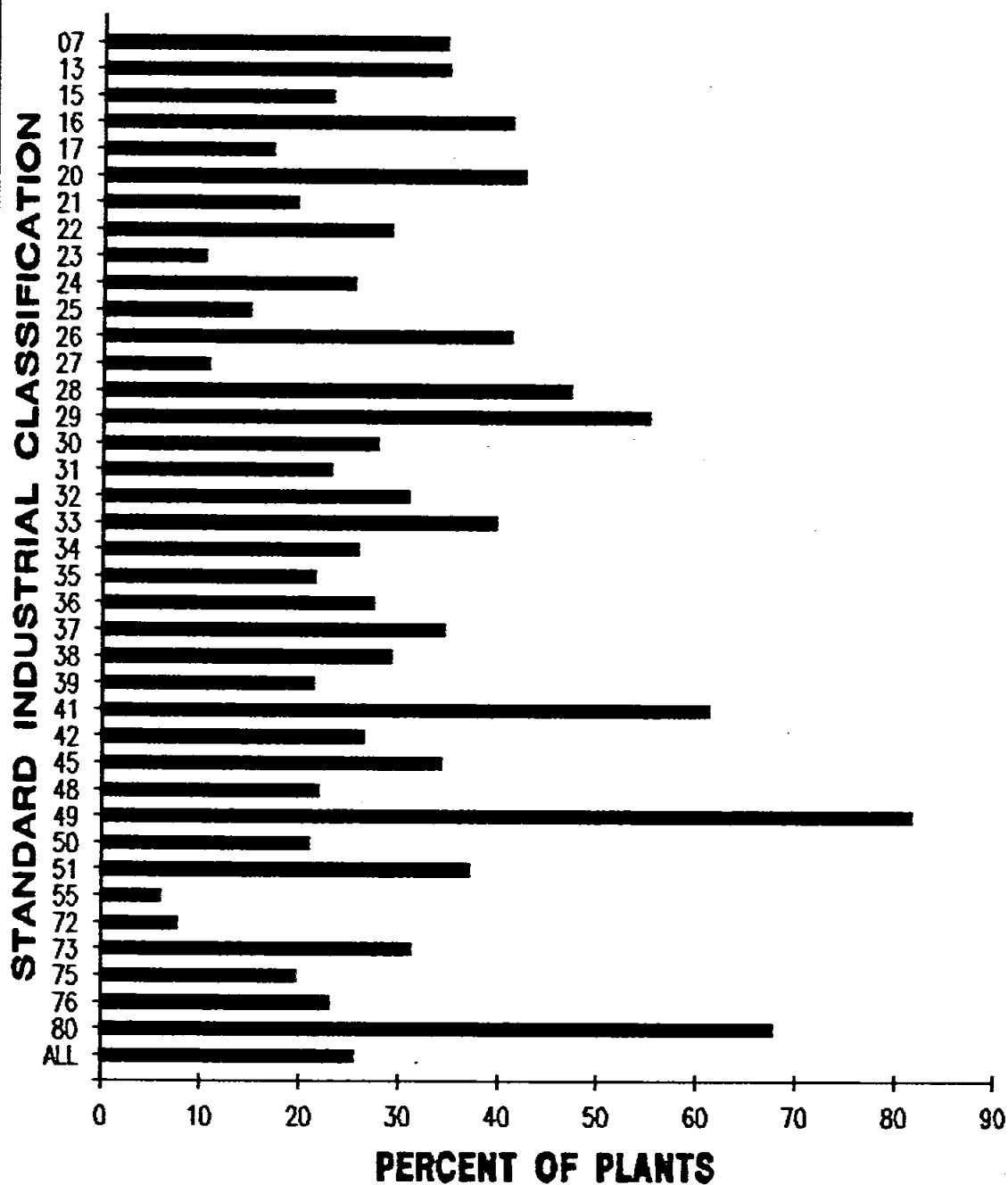
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
HAVE A REGULARLY SCHEDULED SAFETY TRAINING PROGRAM

SIC CODE	PLANTS			TOTAL	EMPLOYEES			TOTAL
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)		SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	
07	1885* (647) 33.9%	70* (67) 100.0%	...	1955* (629) 34.7%	50402* (23214) 48.6%	7009* (6680) 100.0%	...	57411* (22027) 51.9%
13	2769* (1126) 32.2%	558* (247) 54.7%	46* (52) 100.0%	3373* (1186) 34.9%	72037* (21275) 34.5%	111082* (49229) 63.9%	31383* (35291) 100.0%	214502* (74309) 51.8%
15	5279 (881) 21.2%	661* (250) 59.7%	135* (100) 100.0%	6075 (934) 23.2%	158431 (23823) 28.1%	95791* (33796) 48.3%	134799* (71218) 100.0%	389021 (76249) 43.4%
16	4552* (1255) 40.3%	574* (179) 51.3%	39* (48) 36.2%	5165* (1313) 41.3%	133172* (35369) 46.9%	124547* (43559) 59.9%	35806* (31376) 35.4%	293525 (62970) 49.5%
17	9450 (1446) 16.3%	853* (221) 44.4%	...	10303 (1470) 17.2%	293548 (40382) 23.4%	159205* (48453) 48.1%	...	452753 (58960) 28.6%
20	4084 (541) 35.8%	1936 (349) 60.2%	457* (150) 81.8%	6477 (711) 42.7%	168739 (14936) 43.4%	423678 (84835) 62.9%	417472* (127700) 84.9%	1009889 (128083) 65.0%
21	4* (6) 14.6%	...	17* (28) 21.6%	21* (25) 19.7%	258* (345) 13.8%	...	45151* (41947) 40.3%	45409* (41728) 39.8%
22	422* (201) 14.4%	800* (203) 50.4%	190* (74) 63.4%	1411* (392) 29.3%	18754* (8320) 17.7%	186557* (48074) 53.8%	171405* (71835) 65.6%	376716* (103410) 52.7%
23	1201* (493) 9.6%	383* (130) 12.4%	85* (49) 35.2%	1670* (517) 10.5%	37107* (12879) 8.8%	73191* (30271) 12.0%	90063* (50341) 43.2%	200361* (54637) 16.1%
24	2212 (469) 20.7%	752 (178) 65.5%	104* (74) 100.0%	3068 (465) 25.6%	104336 (23200) 34.4%	119532 (28663) 65.1%	92355* (52501) 100.0%	316222 (66366) 54.6%
25	347* (194) 8.3%	442* (160) 41.6%	14* (22) 12.0%	803 (160) 15.0%	17268* (10204) 12.4%	128499* (46133) 50.1%	33632* (28613) 27.3%	179398* (49223) 34.6%
26	1410* (594) 34.3%	850 (207) 54.2%	180* (85) 84.2%	2440* (668) 41.4%	49080* (15085) 35.7%	165809* (46367) 58.9%	184857* (74073) 89.4%	399747* (104110) 63.9%
27	1561* (441) 8.6%	493* (149) 26.3%	133* (58) 42.2%	2187 (465) 10.8%	69948* (21366) 14.6%	93851* (31839) 26.0%	149386* (57024) 43.2%	313185 (67435) 26.4%
28	2386 (522) 38.6%	893 (116) 77.0%	369 (66) 97.1%	3648 (592) 47.3%	90417 (12561) 50.0%	208039 (32959) 79.8%	468180 (98398) 98.3%	766635 (106159) 83.5%
29	414* (252) 41.0%	293* (125) 100.0%	69* (40) 68.4%	777* (305) 55.3%	27919* (16421) 68.1%	63255* (21394) 100.0%	90619* (69338) 77.1%	181793* (79863) 82.0%
30	1301* (386) 19.4%	883* (256) 57.5%	180* (67) 80.3%	2364 (450) 27.9%	59452* (15428) 26.4%	174192* (51746) 59.1%	208455* (70884) 89.2%	442099 (89605) 58.7%
31	202* (124) 21.6%	154* (78) 27.1%	...	356* (153) 23.3%	8464* (4913) 34.0%	37891* (18953) 28.0%	...	46354* (20051) 26.3%
32	2373* (667) 27.0%	616* (158) 60.8%	117* (47) 63.8%	3106 (692) 31.1%	83573 (19701) 35.2%	129913* (37884) 62.2%	79886* (35340) 61.9%	293372 (55527) 51.0%
33	1243* (323) 30.1%	835 (204) 56.9%	294 (60) 87.3%	2373 (388) 39.9%	46557 (9390) 33.6%	185161 (42841) 59.5%	583617 (70723) 93.9%	815335 (85590) 76.1%

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	4072 (737) 22.0%	1383 (137) 44.3%	252* (79) 73.0%	5708 (753) 26.0%	126480 (16648) 22.8%	278869 (32979) 46.7%	282613* (104174) 80.5%	687961 (117431) 45.8%
35	3598 (833) 15.9%	1696 (268) 49.8%	523 (77) 66.7%	5817 (884) 21.7%	123989 (25372) 20.4%	324451 (40217) 49.1%	837558 (122687) 75.3%	1285998 (125049) 54.0%
36	1387* (412) 19.5%	1133 (196) 42.2%	404* (113) 51.3%	2923 (531) 27.6%	66390* (16761) 28.8%	257820 (41375) 46.7%	790938 (197529) 66.9%	1115149 (202807) 56.7%
37	989* (355) 24.9%	570* (151) 47.9%	377 (90) 90.7%	1937 (452) 34.7%	45958* (18752) 36.2%	119916* (39485) 50.1%	1393982 (226346) 92.1%	1559856 (222483) 83.0%
38	559* (173) 20.8%	345* (111) 36.1%	291* (102) 70.0%	1195 (257) 29.4%	28810* (9533) 27.5%	87395* (28524) 45.0%	365956* (110653) 79.5%	482160* (122776) 63.5%
39	1048* (407) 16.0%	291* (615) 36.4%	312* (227) 92.3%	1650* (641) 21.5%	23935* (8706) 14.4%	69569* (157739) 46.6%	188837* (128281) 90.2%	282340* (159387) 53.8%
41	2699* (824) 61.1%	329* (126) 64.5%	...	3027* (845) 61.4%	75582* (20375) 64.3%	58610* (32330) 71.9%	...	134191* (40199) 67.4%
42	5045 (974) 25.2%	652* (172) 44.0%	42* (27) 50.7%	5739 (960) 26.6%	155010 (31227) 31.8%	121118 (29335) 46.8%	33539* (21995) 44.8%	309667 (44378) 37.7%
45	1097* (647) 33.8%	173* (137) 29.4%	99* (38) 67.4%	1369* (666) 34.4%	36010* (23294) 46.5%	55575* (49616) 50.8%	187486* (71448) 70.9%	279072* (100282) 61.9%
48	2709* (913) 18.4%	708* (181) 78.5%	34* (21) 99.0%	3451* (966) 22.1%	128393* (63205) 30.2%	131580* (38601) 74.6%	70083* (43687) 100.0%	330056* (92460) 49.1%
49	6358 (1442) 77.4%	1862* (567) 100.0%	173* (99) 99.8%	8393 (1586) 81.9%	218026 (47488) 80.9%	425470* (151076) 100.0%	146565* (65566) 100.0%	790060 (174982) 93.9%
50	5695* (1591) 18.8%	1086* (345) 60.3%	...	6781 (1604) 21.1%	143113* (38507) 22.7%	177659* (61442) 62.7%	...	320772 (76754) 35.1%
51	3490 (587) 38.3%	...	...	3490 (587) 37.3%	83186* (22955) 45.0%	...	...	83186* (22955) 39.2%
55	1212* (597) 6.4%	...	...	1212* (597) 6.2%	23431* (12981) 7.6%	...	...	23431* (12981) 5.7%
72	1561* (757) 7.6%	124* (88) 18.3%	...	1685* (739) 7.9%	31107* (15985) 8.2%	19116* (15200) 23.3%	...	50223* (20302) 10.6%
73	4898 (950) 29.6%	645 (135) 43.3%	247* (127) 72.4%	5790 (995) 31.5%	126752* (32329) 30.1%	167026 (32867) 47.8%	248958* (105894) 75.7%	542736 (113159) 49.3%
75	5213* (1773) 19.9%	...	...	5213* (1773) 19.9%	84105* (31090) 20.4%	...	...	84105* (31090) 20.0%
76	2268* (1058) 23.3%	36* (45) 29.4%	...	2304* (1064) 23.3%	43406* (18957) 24.3%	12672* (15755) 52.1%	...	56079* (25875) 27.7%
80	1367* (527) 48.1%	1674 (229) 77.3%	1760 (280) 85.4%	4800 (576) 67.9%	59743* (17667) 58.8%	399756 (61956) 74.8%	2659327 (357729) 88.0%	3118826 (356756) 85.2%
ALL	98357 (4897) 22.0%	24780 (1187) 50.0%	6961 (392) 73.9%	130098 (5440) 25.7%	3112886 (135066) 28.2%	5202892 (228985) 53.2%	10031915 (451385) 80.5%	18347693 (516304) 55.2%

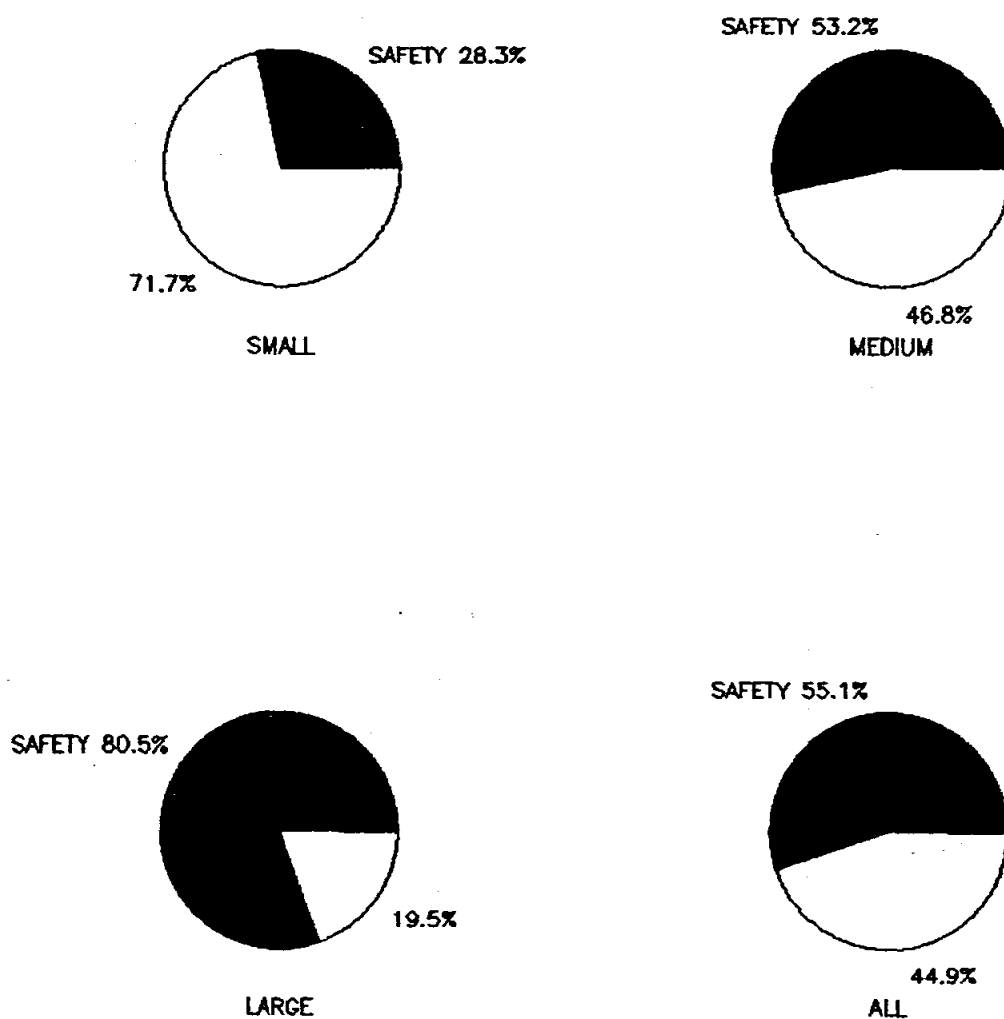
\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE IV - 131**  
**PLANTS WHICH PROVIDE A SAFETY TRAINING PROGRAM**  
**(NOES 1981-1983)**

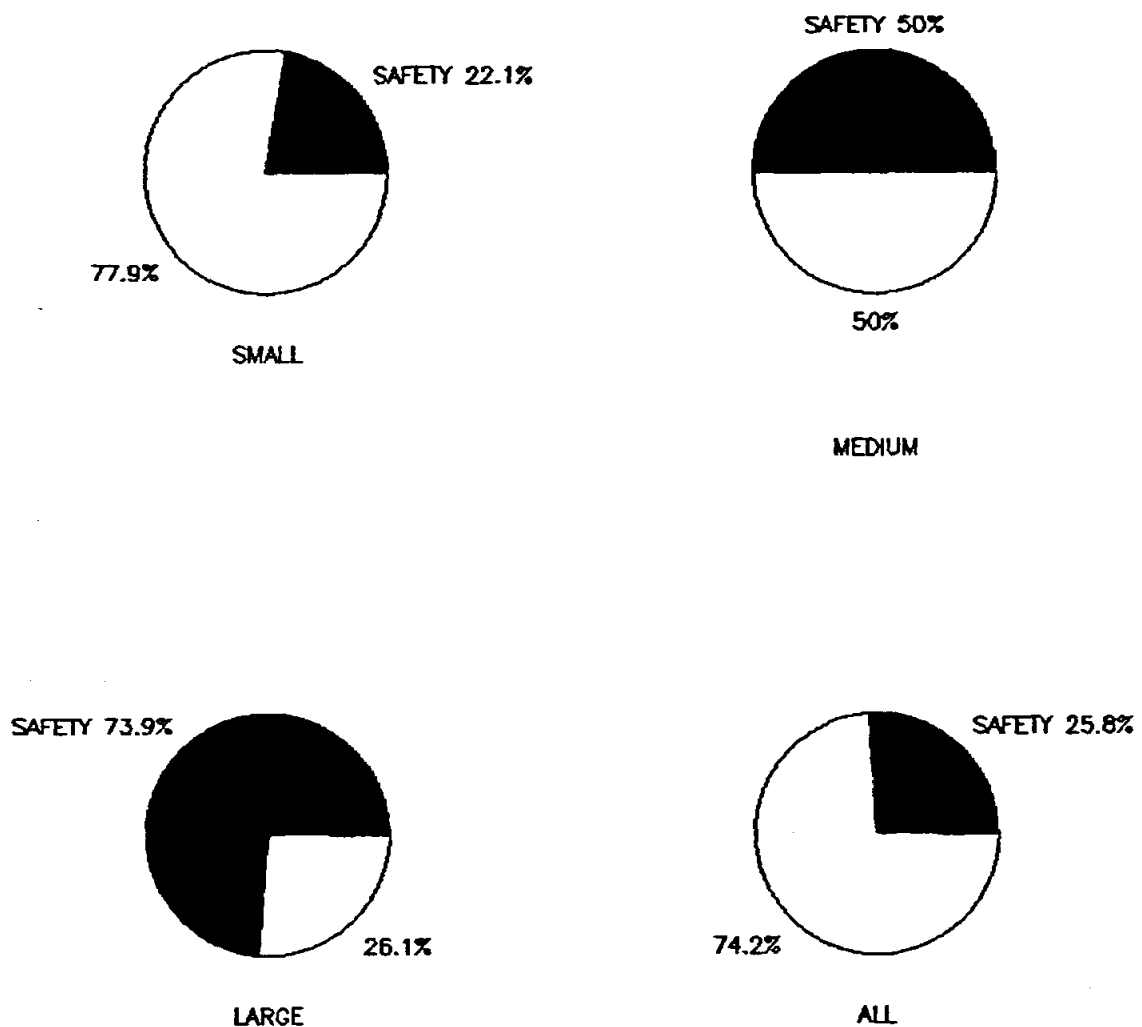




**FIGURE IV - 132**  
**WORKERS IN PLANTS WHICH HAVE A FORMAL**  
**SAFETY TRAINING PROGRAM BY PLANT SIZE**  
**(NOES 1981-1983)**



**FIGURE IV - 133**  
**PLANTS WHICH HAVE A FORMAL**  
**SAFETY TRAINING PROGRAM**  
**(NOES 1981-1983)**



**NOES QUESTIONNAIRE ITEM NO. 58**

**Existence of a Program to Regularly Assess Worker Awareness of Safety Rules**

**Intent**

The intent of this question was to determine if management makes periodic assessments of employee awareness of the safety rules established for the facility.

This item was displayed on the questionnaire as:

58. Do you have a program under which you regularly or routinely assess the employee's awareness of safety rules?

- 1 Yes
- 2 No

**Notes**

Continual, informal assessments by management representatives met the intent of this question if there was evidence that management initiated the assessment and received reports.

Voluntary or employee-suggestion input by workers to management concerning job safety were not an acceptable alternative program.

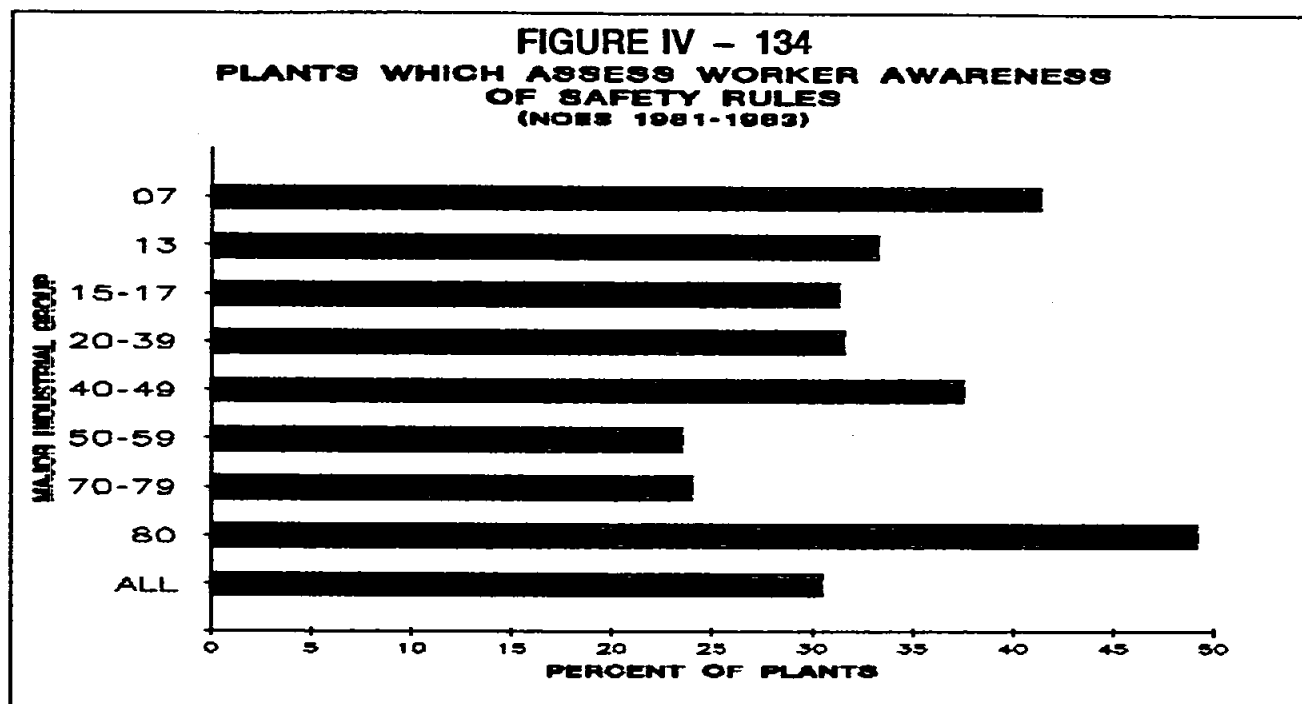
**Analysis**

One analysis of the responses to question 58 is presented.

Response 58.1 - Employee awareness of safety rules regularly assessed.

Number and percent of plants and employees in plants which had a management-initiated and regularly scheduled (or continuous) program to assess employee awareness of facility safety rules, and workers in those plants (by number and proportion of the total) are displayed in Figures IV-134, IV-135, IV-136, and IV-137, and Tables IV-81 and IV-82.

Figure IV-134	Plants which assess worker awareness of safety rules (by major industrial group)
Figure IV-135	Plants which assess worker awareness of safety rules (by 2-digit SIC)
Figure IV-136	Workers in plants which assess employee awareness of safety rules by plant size
Figure IV-137	Plants with programs to assess worker awareness of safety rules
Table IV-81	Number and percent of plants and employees in plants which regularly assess worker awareness of safety rules (by major industrial group)
Table IV-82	Number and percent of plants and employees in plants which regularly assess worker awareness of safety rules (by 2-digit SIC)



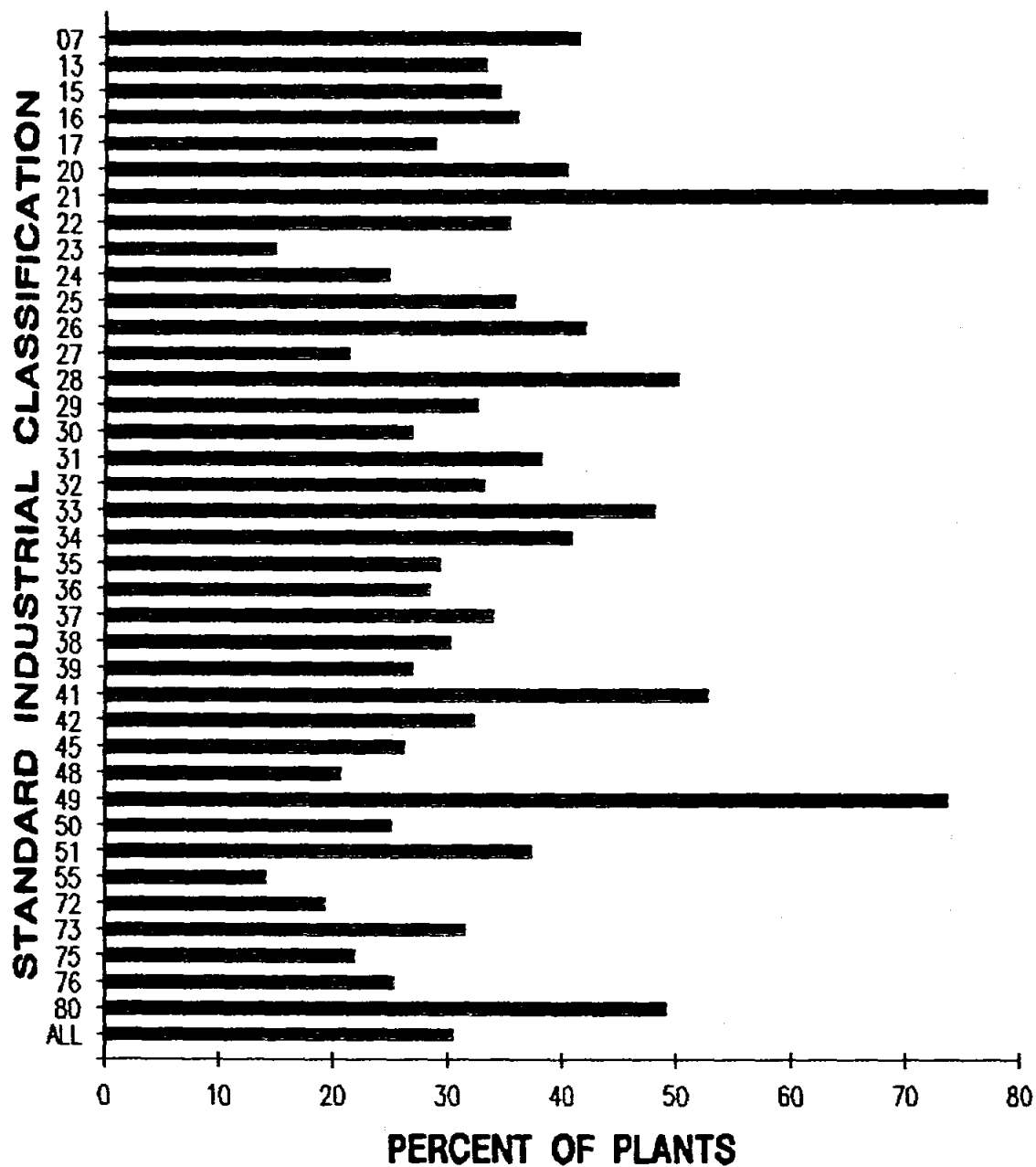
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-81

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 REGULARLY ASSESS EMPLOYEE AWARENESS OF SAFETY RULES

MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	2270* (918) 40.8%	70* (67) 100.0%	...	2340* (900) 41.5%	47539* (22117) 45.9%	7009* (6680) 100.0%	...	54548* (20894) 49.3%
13	2869* (825) 33.4%	312* (105) 30.6%	46* (52) 100.0%	3227* (866) 33.4%	94897 (23199) 45.4%	72837* (25031) 41.9%	31383* (35291) 100.0%	199117* (59911) 48.1%
15-17	28949 (2630) 30.7%	1874 (441) 45.2%	154* (124) 63.5%	30976 (2613) 31.4%	725656 (56583) 34.6%	357539 (81053) 48.5%	152371* (90750) 64.5%	1235567 (132453) 40.2%
20-39	40506 (3120) 26.4%	16320 (968) 51.4%	3786 (221) 60.4%	60613 (3436) 31.7%	1455889 (76338) 31.5%	3453914 (188007) 54.1%	5626005 (255302) 68.1%	10535807 (332450) 54.7%
40-49	17925 (2352) 33.7%	4164 (752) 71.2%	262* (85) 55.9%	22350 (2377) 37.6%	608598 (75200) 42.4%	878104 (186746) 76.1%	340948* (91106) 59.4%	1827649 (238474) 57.8%
50-59	13076 (1669) 22.4%	1309* (456) 49.2%	...	14385 (1729) 23.6%	325198 (39804) 28.9%	201384* (67735) 49.3%	...	526582 (83332) 34.3%
70-79	17077 (2631) 23.4%	1001* (255) 42.7%	174* (70) 49.0%	18252 (2714) 24.1%	362333 (57433) 26.0%	218475 (53160) 47.0%	171831* (66073) 50.6%	752640 (101394) 34.3%
80	530 (123) 18.7%	1418 (186) 65.5%	1537 (264) 74.6%	3484 (303) 49.3%	38373 (8066) 37.8%	356361 (50017) 66.7%	2360310 (342649) 78.1%	2755044 (347845) 75.3%
ALL	123201 (5782) 27.4%	26467 (1421) 52.9%	5958 (386) 63.1%	155627 (6024) 30.6%	3658484 (143735) 33.0%	5545625 (295596) 56.2%	8682848 (452476) 69.6%	17886957 (572000) 53.5%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE IV - 135**  
**PLANTS WHICH ASSESS WORKER AWARENESS**  
**OF SAFETY RULES**  
**(NOES 1981-1983)**



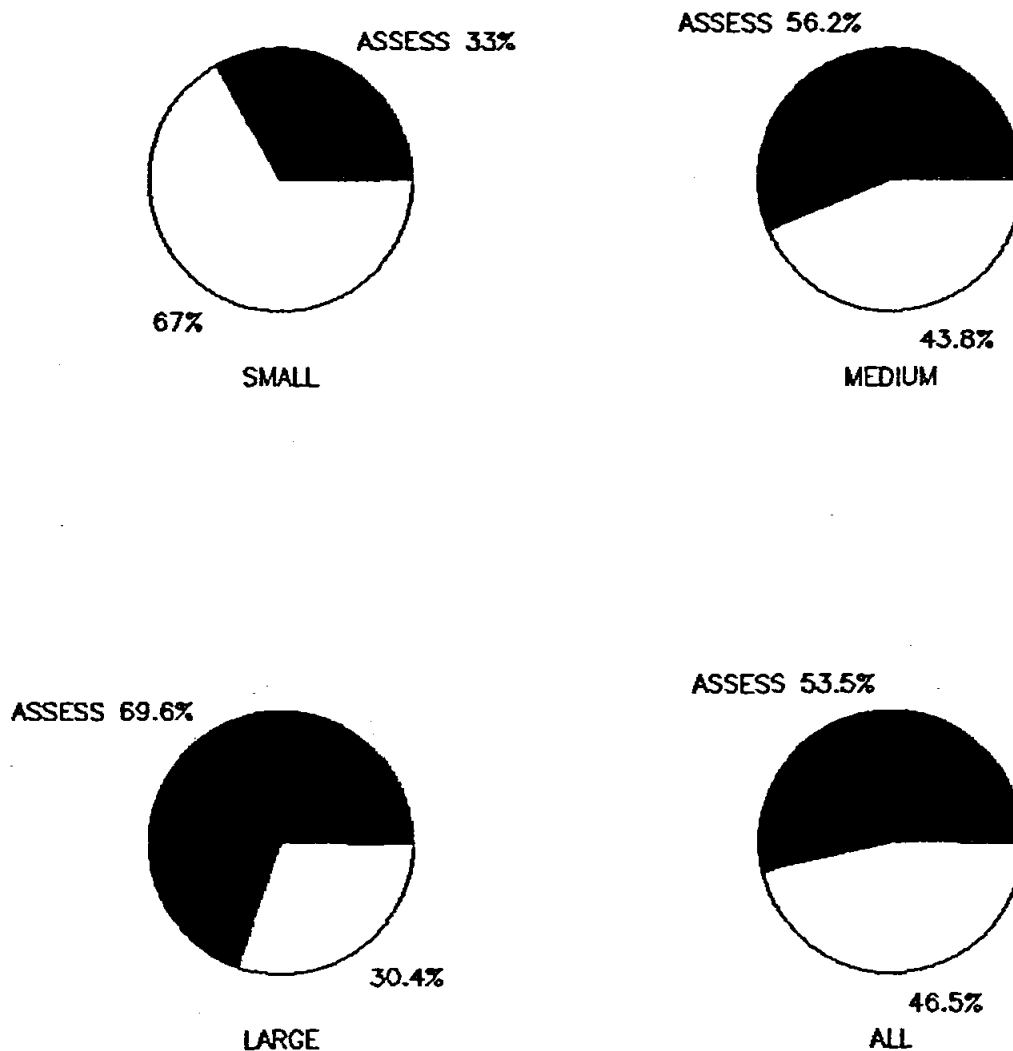
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
REGULARLY ASSESS EMPLOYEE AWARENESS OF SAFETY RULES

SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	2270* (918) 40.8%	70* (67) 100.0%	...	2340* (900) 41.5%	47539* (22117) 45.9%	7009* (6680) 100.0%	...	54548* (20894) 49.3%
13	2869* (825) 33.4%	312* (105) 30.6%	46* (52) 100.0%	3227* (866) 33.4%	94897 (23199) 45.4%	72837* (25031) 41.9%	31383* (35291) 100.0%	199117* (59911) 48.1%
15	8318 (923) 33.4%	643* (228) 58.1%	82* (94) 61.1%	9044 (942) 34.6%	204755 (25203) 36.4%	128241* (40373) 64.7%	84501* (63424) 62.7%	417497 (80181) 46.6%
16	4050* (1245) 35.9%	404* (151) 36.1%	71* (64) 66.4%	4525* (1239) 36.2%	125267* (35700) 44.1%	70680* (27200) 34.0%	67871* (50891) 67.0%	263817 (60934) 44.5%
17	16581 (2248) 28.5%	827* (279) 43.1%	...	17408 (2285) 29.0%	395634 (44309) 31.6%	158619* (56573) 47.9%	...	554253 (72991) 35.0%
20	3964 (799) 34.7%	1888 (365) 58.7%	303* (96) 54.3%	6156 (936) 40.5%	160565 (23892) 41.3%	399446 (79917) 59.3%	287227* (89078) 58.4%	847238 (97437) 54.5%
21	30* (43) 100.0%	...	54* (34) 68.0%	84* (48) 77.1%	1866* (2685) 100.0%	...	98088* (66468) 87.5%	99954* (65783) 87.7%
22	623* (271) 21.2%	838* (221) 52.8%	252* (84) 84.2%	1713 (416) 35.5%	33650* (14305) 31.7%	205385 (50781) 59.2%	223117* (93168) 85.5%	462151 (107414) 64.7%
23	1299* (441) 10.4%	950 (189) 30.6%	122* (59) 50.6%	2371 (528) 15.0%	46468* (15822) 11.0%	197961 (37789) 32.5%	112777* (54877) 54.1%	357206 (69478) 28.8%
24	2312 (551) 21.6%	649* (173) 56.5%	19* (8) 18.1%	2980 (575) 24.9%	100440 (23186) 33.1%	112293* (29004) 61.2%	35767* (18789) 38.7%	248500 (42543) 42.9%
25	1317 (329) 31.6%	571* (195) 53.7%	30* (31) 25.2%	1917 (429) 35.9%	43192* (10944) 31.0%	151612* (49551) 59.1%	50849* (32821) 41.3%	245653* (65914) 47.4%
26	1368* (521) 33.3%	932 (225) 59.4%	180* (85) 84.2%	2481* (642) 42.1%	41886* (12178) 30.4%	177540* (48711) 63.1%	184857* (74073) 89.4%	404283* (106701) 64.6%
27	3284 (585) 18.1%	914 (195) 48.8%	165* (79) 52.1%	4363 (619) 21.5%	119479 (20389) 25.0%	181882* (47753) 50.4%	163722* (65373) 47.4%	465083 (82304) 39.3%
28	2712 (509) 43.9%	820 (140) 70.7%	343 (64) 90.2%	3874 (580) 50.2%	80746 (13574) 44.7%	192663 (39534) 73.9%	430177 (96925) 90.3%	703586 (103694) 76.7%
29	96* (109) 9.5%	293* (125) 100.0%	69* (40) 68.4%	459* (188) 32.7%	3667* (4156) 8.9%	63255* (21394) 100.0%	90619* (69338) 77.1%	157541* (76702) 71.0%
30	1338* (432) 19.9%	797* (221) 51.9%	154* (63) 68.7%	2289 (509) 27.0%	69127* (20552) 30.7%	141551* (37015) 48.1%	191165* (69068) 81.8%	401843 (78375) 53.4%
31	425* (228) 45.7%	137* (87) 24.1%	22* (20) 87.3%	584* (274) 38.3%	14051* (6419) 56.5%	31456* (20087) 23.2%	11650* (10428) 74.4%	57157* (27651) 32.5%
32	2482* (706) 28.2%	702 (130) 69.4%	144* (60) 78.0%	3328 (727) 33.3%	66005 (15619) 27.8%	144060 (34105) 68.9%	96654* (43227) 74.9%	306719 (58522) 53.3%
33	1775* (524) 42.9%	799 (138) 54.4%	291 (65) 86.3%	2864 (544) 48.2%	67702* (19251) 48.9%	190331 (32867) 61.2%	554568 (77004) 89.2%	812601 (85279) 75.9%

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	7102 (937) 38.3%	1705 (192) 54.6%	194* (59) 56.0%	9001 (919) 40.9%	218268 (22012) 39.3%	356793 (37800) 59.8%	180113* (59538) 51.3%	755174 (78882) 50.3%
35	5564 (957) 24.6%	1799 (216) 52.8%	553 (82) 70.6%	7916 (1002) 29.5%	175522 (22366) 28.9%	326439 (36957) 49.4%	836046 (114057) 75.1%	1338007 (126437) 56.2%
36	1396* (493) 19.7%	1253 (165) 46.7%	364* (92) 46.3%	3014 (493) 28.5%	72187* (20919) 31.3%	283113 (39032) 51.2%	661504* (203100) 55.9%	1016803 (201851) 51.7%
37	1080* (352) 27.2%	540 (129) 45.4%	285* (80) 68.5%	1905 (411) 34.1%	52854* (18241) 41.6%	122225* (31942) 51.1%	1121372 (183654) 74.1%	1296451 (173936) 69.0%
38	586* (336) 21.8%	428* (128) 44.7%	223* (91) 53.6%	1236* (349) 30.4%	30883* (11369) 29.5%	105960* (33726) 54.5%	270267* (99538) 58.7%	407110* (115775) 53.6%
39	1753* (605) 26.8%	304* (662) 38.1%	20* (17) 6.0%	2078* (918) 27.0%	57332* (14947) 34.6%	69950* (155954) 46.8%	25466* (19911) 12.2%	152747* (156505) 29.1%
41	2279* (823) 51.6%	329* (126) 64.5%	...	2607* (841) 52.9%	63004* (15996) 53.6%	58610* (32330) 71.9%	...	121614* (34747) 61.1%
42	6099* (1609) 30.5%	886 (162) 59.8%	27* (16) 32.8%	7012 (1612) 32.5%	198571 (44866) 40.7%	152274 (22318) 58.8%	29949* (20183) 40.0%	380794 (52553) 46.4%
45	733* (432) 22.6%	249* (210) 42.2%	63* (33) 42.8%	1045* (497) 26.3%	18978* (13638) 24.5%	63345* (57328) 57.9%	135826* (69779) 51.4%	218149* (97460) 48.4%
48	2420* (795) 16.5%	820 (195) 90.9%	19* (16) 56.8%	3260* (868) 20.8%	94535* (47302) 22.2%	156147* (42209) 88.6%	37029* (29526) 52.8%	287712* (86527) 42.8%
49	5736* (1457) 69.8%	1714* (554) 92.0%	120* (90) 69.2%	7569 (1647) 73.8%	207970 (50681) 77.2%	405465* (150700) 95.3%	120133* (61318) 82.0%	733568 (173005) 87.2%
50	7029 (1223) 23.2%	1072* (372) 59.5%	...	8100 (1322) 25.2%	201461 (36371) 32.0%	174371* (62993) 61.6%	...	375832 (81384) 41.1%
51	3257 (793) 35.7%	237* (237) 100.0%	...	3494 (793) 37.4%	68625* (19344) 37.1%	27013* (27013) 100.0%	...	95638* (35217) 45.1%
55	2790* (872) 14.7%	...	...	2790* (872) 14.3%	55112* (21601) 17.8%	...	...	55112* (21601) 13.5%
72	4015* (1250) 19.5%	125* (96) 18.5%	...	4140* (1287) 19.4%	84876* (27697) 22.3%	12665* (9763) 15.4%	...	97541* (30797) 20.6%
73	4903 (970) 29.6%	753 (172) 50.6%	174* (70) 50.9%	5830 (992) 31.7%	126867 (27147) 30.1%	181469 (40791) 51.9%	171831* (66073) 52.2%	480168 (74921) 43.6%
75	5770* (1772) 22.0%	...	...	5770* (1772) 22.0%	93232* (26845) 22.6%	...	...	93232* (26845) 22.1%
76	2389* (885) 24.5%	123* (94) 100.0%	...	2512* (894) 25.4%	57358* (18850) 32.1%	24341* (19716) 100.0%	...	81699* (27922) 40.3%
80	530 (123) 18.7%	1418 (186) 65.5%	1537 (264) 74.6%	3484 (303) 49.3%	38373 (8066) 37.8%	356361 (50017) 66.7%	2360310 (342649) 78.1%	2755044 (347845) 75.3%
ALL	122544 (7921) 27.4%	26327 (1112) 53.1%	5942 (403) 63.0%	154813 (8315) 30.6%	3632944 (171735) 33.0%	5512451 (221932) 56.4%	8673843 (463098) 69.6%	17819238 (524555) 53.6%

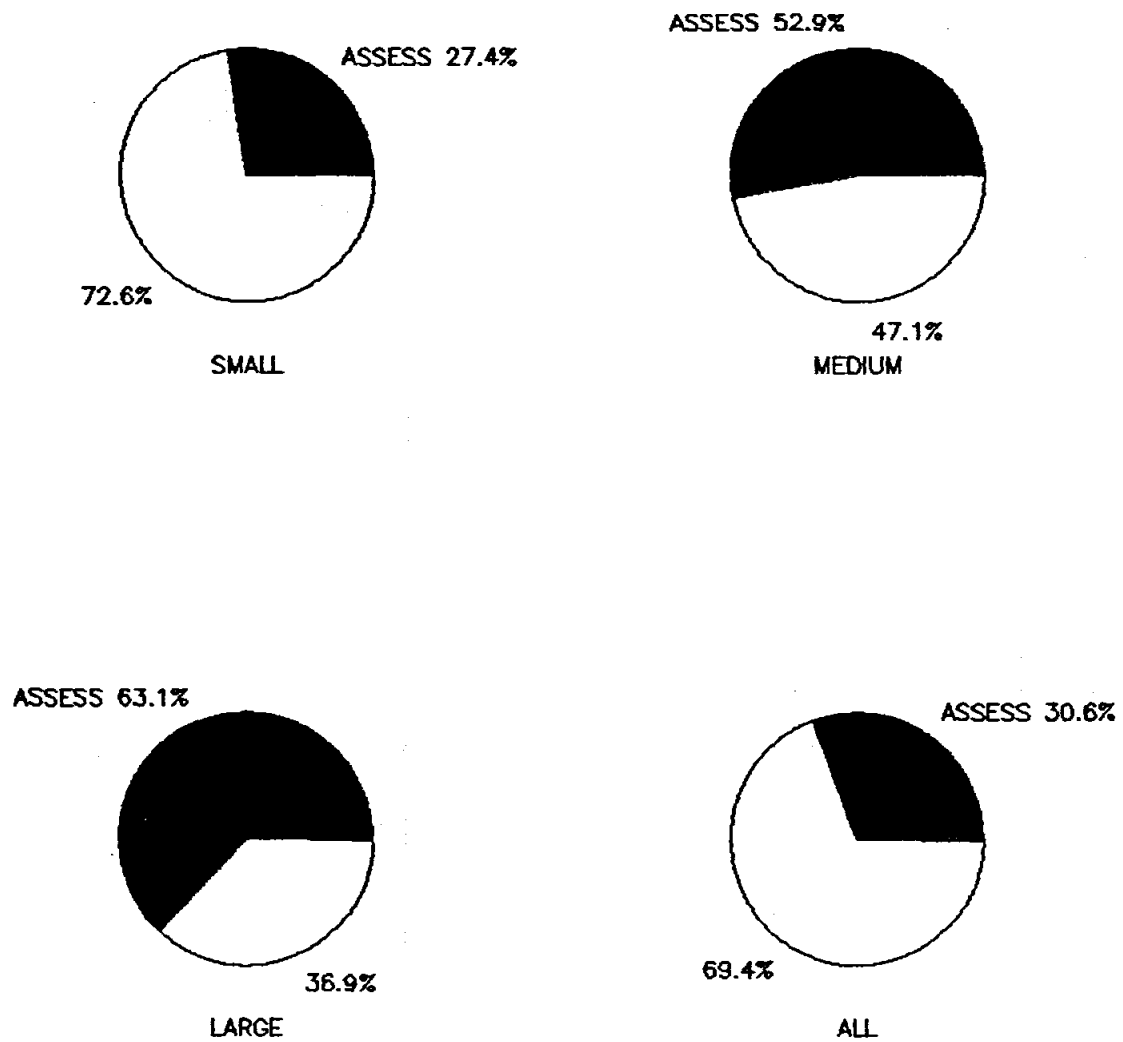
\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE IV - 136**  
**WORKERS IN PLANTS WHICH ASSESS EMPLOYEE**  
**AWARENESS OF SAFETY RULES BY PLANT SIZE**  
**(NOES 1981-1983)**





**FIGURE IV - 137**  
**PLANTS WITH PROGRAMS TO ASSESS WORKER**  
**AWARENESS OF SAFETY RULES**  
**(NOES 1981-1983)**



**NOES QUESTIONNAIRE ITEM NO. 59**  
**Plants Taking Corrective Measures for Safety Rule Violations**

**Intent**

The intent of this question was to determine if the facility had a functioning program of corrective actions to be used when safety rules were violated.

This item was displayed on the questionnaire as:

59. In those instances where employees are found to be in violation of the safety rules, are correcting measures taken?

- 1 Yes
- 2 No (Skip to Question 62)

**Notes**

A corrective measure was considered to be a formal action by management personnel against a worker or workers who violated safety rules established for the facility. These actions include, but are not limited to: transfer, removal, dismissal, suspension, or fines imposed by management.

Verbal reprimands by management, or union sanctions against the worker(s) do not meet the intent of the question.

**Analysis**

One analysis of the responses to question 59 is presented.

**Response 59.1 - Corrective measures taken for safety rule violations**

The estimates of the plants which have a management-directed policy to take corrective measures against employees who violate safety rules, and workers in those plants (by number and proportion of the total) are displayed in Figures IV-138, IV-139, IV-140, IV-141, IV-142, and IV-143, and Tables IV-83 and IV-84.

Figure IV-138	Workers in plants which take corrective measures for safety rule violations (by major industrial group)
Figure IV-139	Workers in plants which take corrective measures for safety rule violations (by 2-digit SIC)
Figure IV-140	Plants which take corrective measures for safety rule violations (by major industrial group)
Figure IV-141	Plants which take corrective measures for safety rule violations (by 2-digit SIC)
Figure IV-142	Workers in plants which take corrective measures if employees violate safety rules by plant size
Figure IV-143	Plants which take corrective action if employees violate safety rules

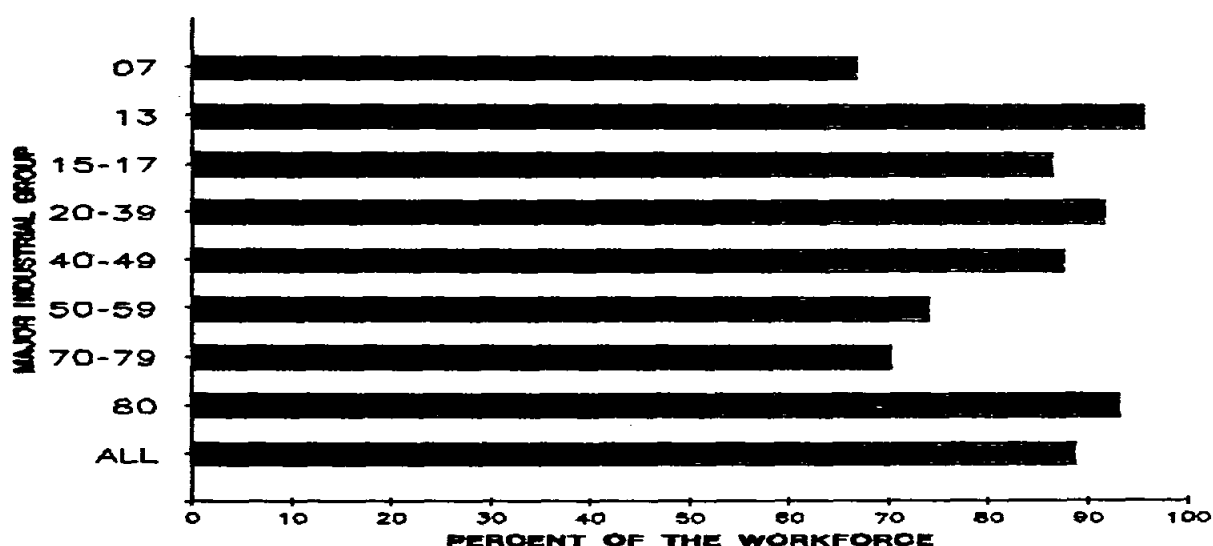
**Table IV-83**

**Number and percent of plants and employees in plants which take corrective measures for safety rule violations (by major industrial group)**

**Table IV-84**

**Number and percent of plants and employees in plants which take corrective measures for safety rule violations (by 2-digit SIC)**

**FIGURE IV - 138**  
**WORKERS IN PLANTS WHICH TAKE CORRECTIVE**  
**MEASURES FOR SAFETY RULE VIOLATIONS**  
**(NOES 1981-1983)**



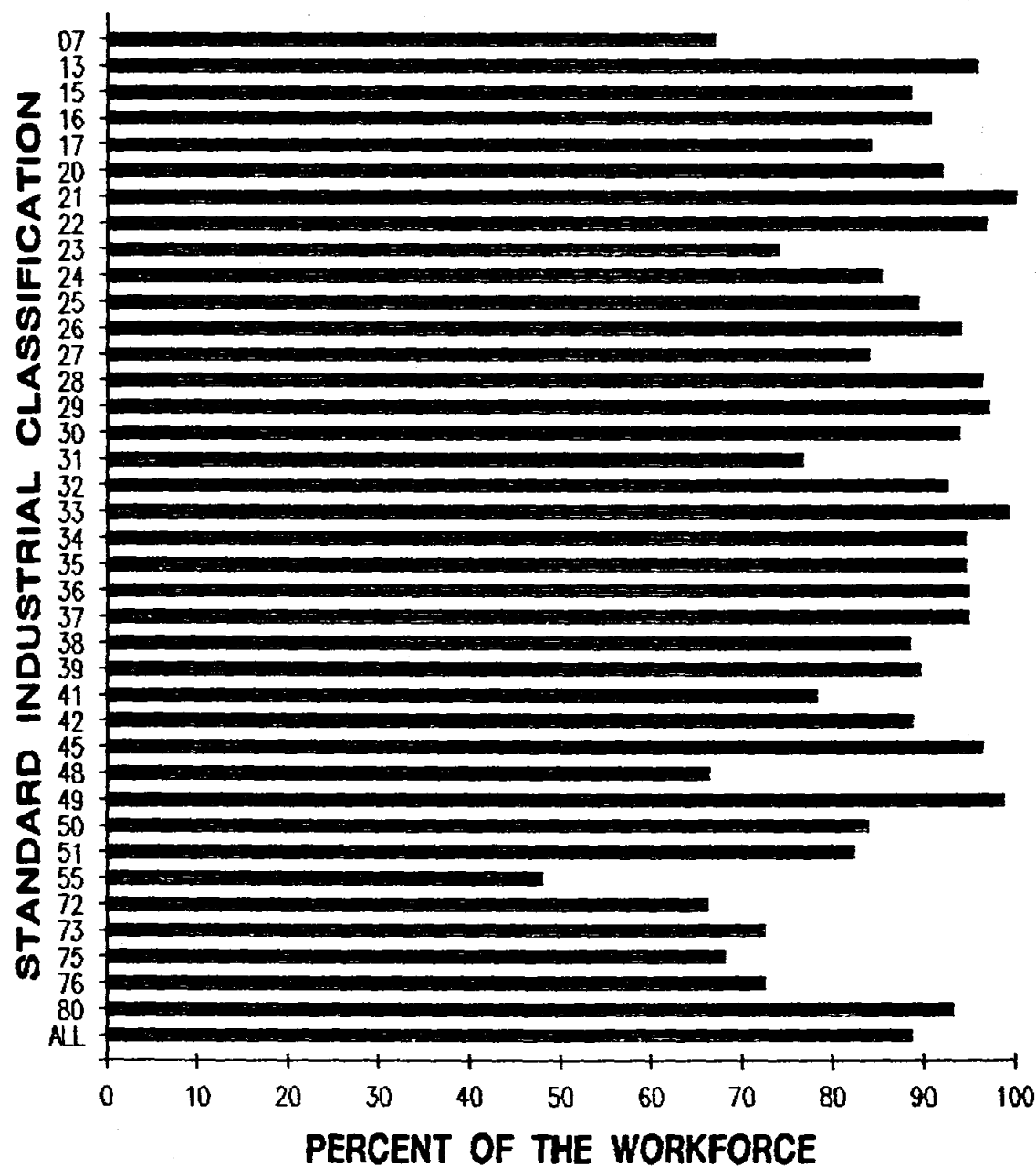
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-83

**NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH**  
**TAKE CORRECTIVE MEASURES FOR SAFETY RULE VIOLATIONS**

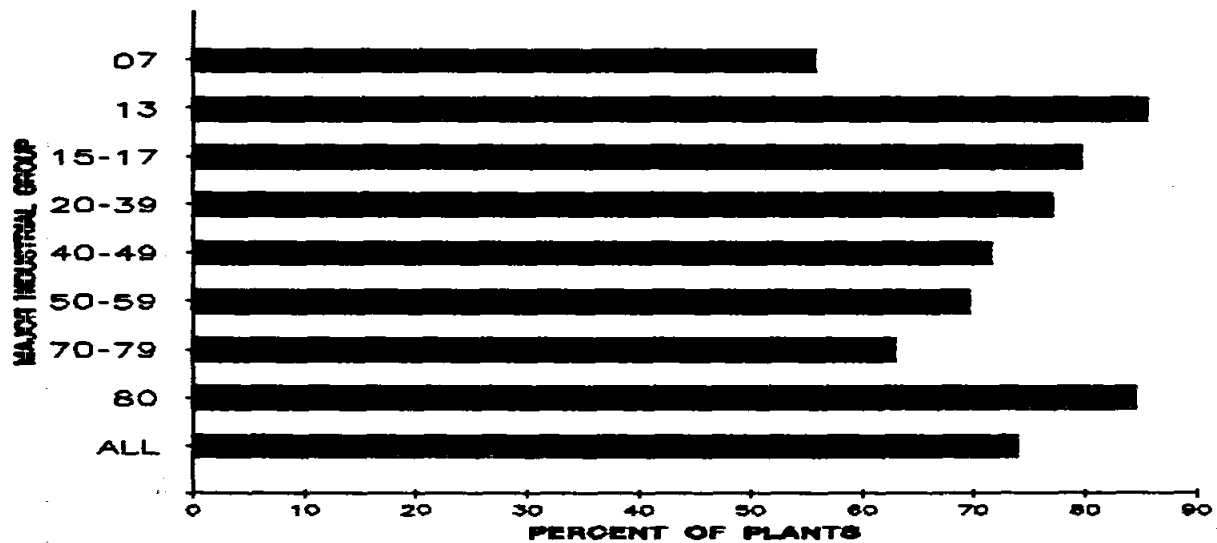
MAJOR GROUP	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	3082* (1107) 55.4%	70* (67) 100.0%	...	3152* (1096) 56.0%	67193* (26732) 64.8%	7009* (6680) 100.0%	...	74203* (25825) 67.0%
13	7214 (1605) 83.9%	1019* (331) 100.0%	46* (52) 100.0%	8279 (1811) 85.7%	191455 (36051) 91.6%	173943* (58021) 100.0%	31383* (35291) 100.0%	396781* (99982) 95.8%
15-17	74739 (2510) 79.2%	3858 (507) 93.1%	242* (135) 100.0%	78840 (2486) 79.9%	1732743 (42900) 82.6%	695584 (102062) 94.4%	236057* (100060) 100.0%	2664384 (121873) 86.7%
20-39	111992 (4799) 73.1%	29558 (1792) 93.1%	6052 (206) 96.5%	147602 (5360) 77.2%	3629899 (107189) 78.6%	5999090 (357219) 94.0%	8076451 (222145) 97.7%	17705440 (501980) 91.9%
40-49	36692 (2804) 69.0%	5551 (968) 95.0%	464* (134) 99.2%	42707 (2997) 71.8%	1101435 (88711) 76.8%	1105798 (215611) 95.9%	567814 (106651) 99.0%	2775046 (260300) 87.8%
50-59	40549 (3119) 69.4%	2040* (537) 76.7%	...	42588 (3081) 69.8%	828100 (82824) 73.6%	310533* (79958) 76.0%	...	1138632 (115618) 74.3%
70-79	45673 (4058) 62.5%	1925 (300) 82.1%	342* (150) 96.5%	47940 (3953) 63.2%	843443 (71592) 60.5%	384455 (62572) 82.8%	319786* (122169) 94.2%	1547684 (107817) 70.4%
80	1970* (616) 69.4%	2046 (282) 94.5%	1969 (294) 95.5%	5985 (569) 84.7%	81906 (18585) 80.6%	491538 (76729) 92.0%	2842421 (376570) 94.0%	3415865 (373035) 93.4%
ALL	321911 (8220) 71.7%	46067 (2232) 92.1%	9115 (436) 96.5%	377094 (8591) 74.1%	8476174 (188533) 76.5%	9167950 (451793) 93.0%	12073912 (478237) 96.8%	29718035 (713725) 89.0%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

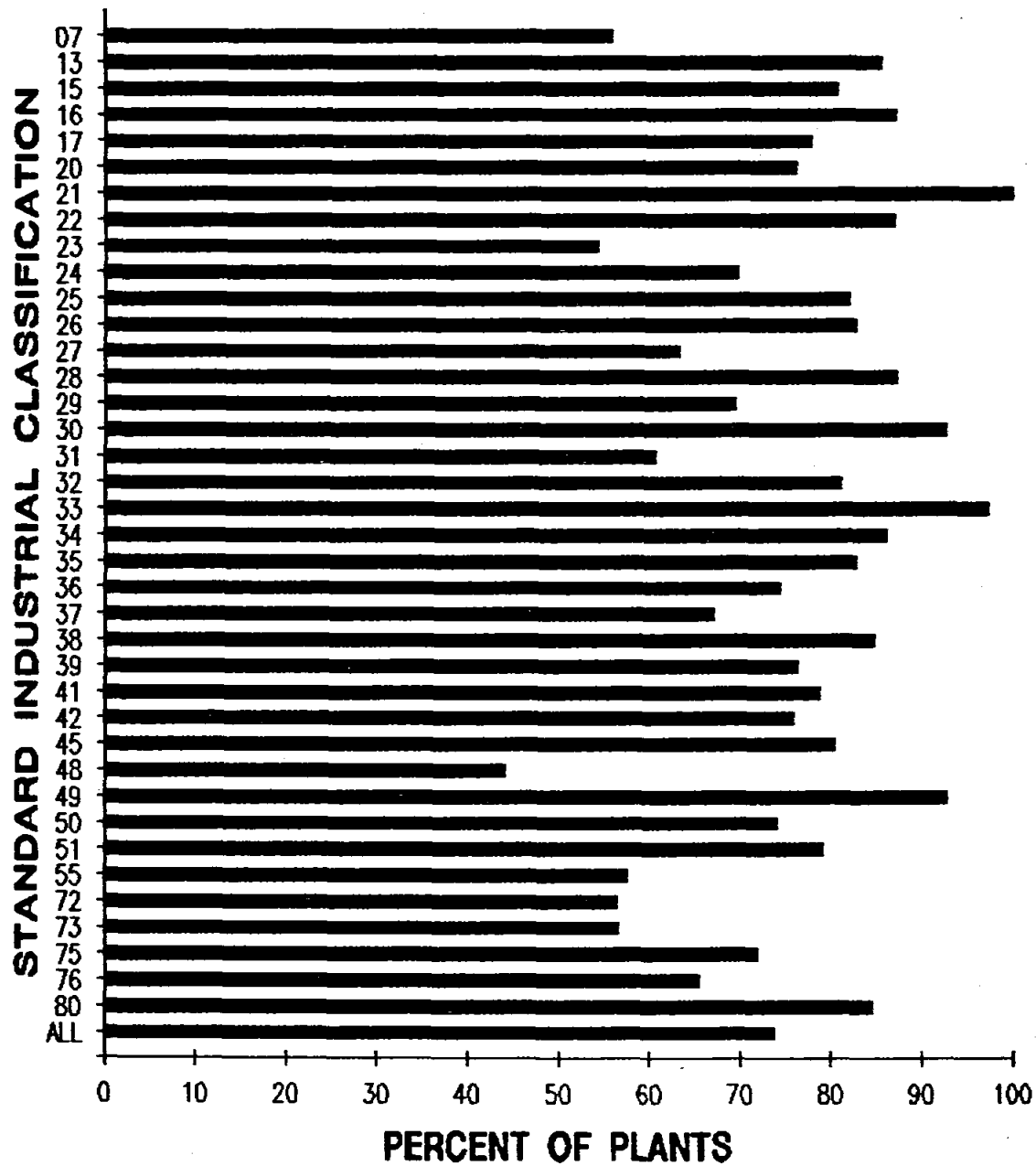
**FIGURE IV - 139**  
**WORKERS IN PLANTS WHICH TAKE CORRECTIVE**  
**MEASURES FOR SAFETY RULE VIOLATIONS**  
**(NOES 1981-1983)**



**FIGURE IV - 140**  
**PLANTS WHICH TAKE CORRECTIVE MEASURES**  
**FOR SAFETY RULE VIOLATIONS**  
**(NOES 1981-1983)**



**FIGURE IV - 141**  
**PLANTS WHICH TAKE CORRECTIVE MEASURES**  
**FOR SAFETY RULE VIOLATIONS**  
**(NOES 1981-1983)**



NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
TAKE CORRECTIVE MEASURES FOR SAFETY RULE VIOLATIONS

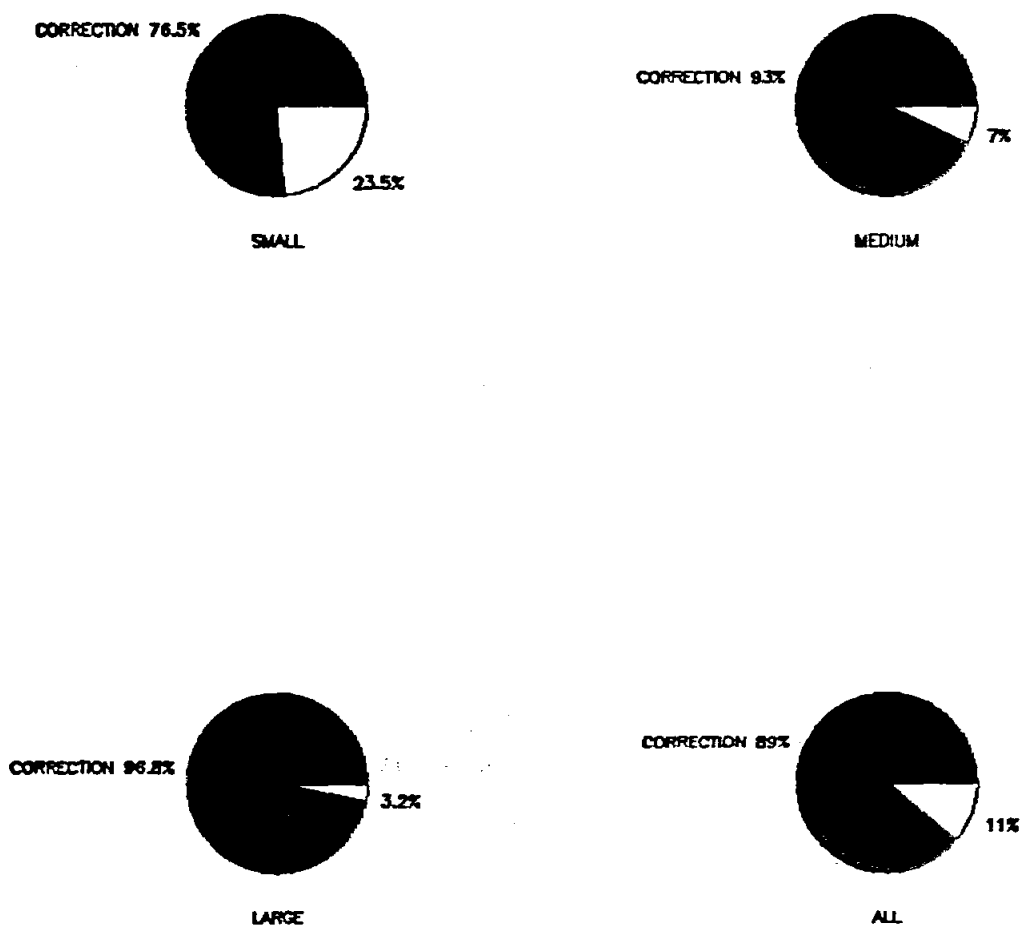
SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	3082* (1107) 55.4%	70* (67) 100.0%	...	3152* (1096) 56.0%	67193* (26732) 64.8%	7009* (6680) 100.0%	...	74203* (25825) 67.0%
13	7214 (1605) 83.9%	1019* (331) 100.0%	46* (52) 100.0%	8279 (1811) 85.7%	191455 (36051) 91.6%	173943* (58021) 100.0%	31383* (35291) 100.0%	396781* (99982) 95.8%
15	19946 (1777) 80.1%	1044 (194) 94.3%	135* (100) 100.0%	21124 (1853) 80.8%	467857 (44490) 83.1%	190966 (38345) 96.3%	134799* (71218) 100.0%	793622 (90259) 88.6%
16	9853 (1286) 87.3%	952 (184) 85.1%	107* (67) 100.0%	10912 (1314) 87.2%	253081 (44014) 89.1%	184114 (42377) 88.6%	101258* (53561) 100.0%	538453 (86100) 90.8%
17	44941 (1763) 77.3%	1863 (425) 97.1%	...	46804 (1735) 77.9%	1011805 (37478) 80.8%	320505* (82896) 96.8%	...	1332309 (84397) 84.2%
20	7943 (946) 69.6%	3078 (455) 95.7%	559 (121) 100.0%	11581 (1027) 76.3%	281721 (26590) 72.5%	655659 (105498) 97.3%	491775 (104930) 100.0%	1429154 (107832) 92.0%
21	30* (43) 100.0%	...	79* (56) 99.6%	109* (65) 100.0%	1866* (2685) 100.0%	...	112133* (67572) 100.0%	113999* (66861) 100.0%
22	2397 (392) 81.7%	1502 (159) 94.6%	299* (80) 99.9%	4198 (408) 87.1%	93336 (9405) 88.0%	336648 (29009) 97.0%	261093* (94186) 100.0%	691078 (89155) 96.8%
23	5994 (936) 47.9%	2388 (220) 77.0%	242* (93) 100.0%	8625 (996) 54.4%	224706 (18468) 53.0%	484727 (34859) 79.5%	208437* (79559) 100.0%	917870 (80023) 73.9%
24	7175 (733) 67.0%	1082 (136) 94.2%	104* (74) 100.0%	8361 (712) 69.9%	227562 (25924) 74.9%	174437 (24113) 95.0%	92355* (52501) 100.0%	494354 (77337) 85.3%
25	3382 (486) 81.2%	894 (171) 84.2%	119* (75) 99.6%	4395 (519) 82.2%	117677 (16828) 84.6%	223173 (44846) 87.0%	122998* (62394) 100.0%	463848 (80417) 89.5%
26	3187 (581) 77.5%	1480 (264) 94.3%	214* (73) 100.0%	4881 (607) 82.8%	117796 (16532) 85.6%	264622 (49646) 94.0%	206864* (65220) 100.0%	589282 (91463) 94.1%
27	10819 (1404) 59.7%	1779 (132) 95.0%	298* (115) 94.2%	12896 (1397) 63.5%	327464 (30577) 68.5%	342068 (39767) 94.8%	326596* (82467) 94.5%	996128 (98366) 84.1%
28	5252 (505) 85.1%	1118 (93) 96.4%	369 (66) 97.1%	6739 (472) 87.4%	160966 (8502) 89.1%	255608 (28516) 98.0%	468180 (98398) 98.3%	884754 (104401) 96.4%
29	584* (289) 57.8%	293* (125) 100.0%	101* (42) 100.0%	978* (351) 69.6%	34715* (17013) 84.7%	63255* (21394) 100.0%	117545* (70259) 100.0%	215515* (82016) 97.2%
30	6183 (1024) 92.1%	1499 (368) 97.5%	180* (67) 80.3%	7861 (1177) 92.8%	209633 (27481) 93.2%	289412* (79571) 98.3%	208455* (70884) 89.2%	707500 (105492) 93.9%
31	470* (230) 50.5%	432 (97) 75.9%	25* (24) 100.0%	927* (273) 60.8%	14172* (6084) 56.9%	105231* (28642) 77.7%	15664* (16901) 100.0%	135067* (36050) 76.7%
32	6962 (1197) 79.1%	973 (146) 96.2%	184* (71) 99.9%	8119 (1246) 81.2%	199296 (16238) 84.0%	204667 (32074) 97.9%	128993* (49687) 100.0%	532957 (48966) 92.7%
33	3981 (453) 96.3%	1468 (138) 100.0%	337 (62) 100.0%	5786 (471) 97.4%	130640 (9786) 94.3%	311081 (30513) 100.0%	621499 (82456) 100.0%	1063220 (85653) 99.3%



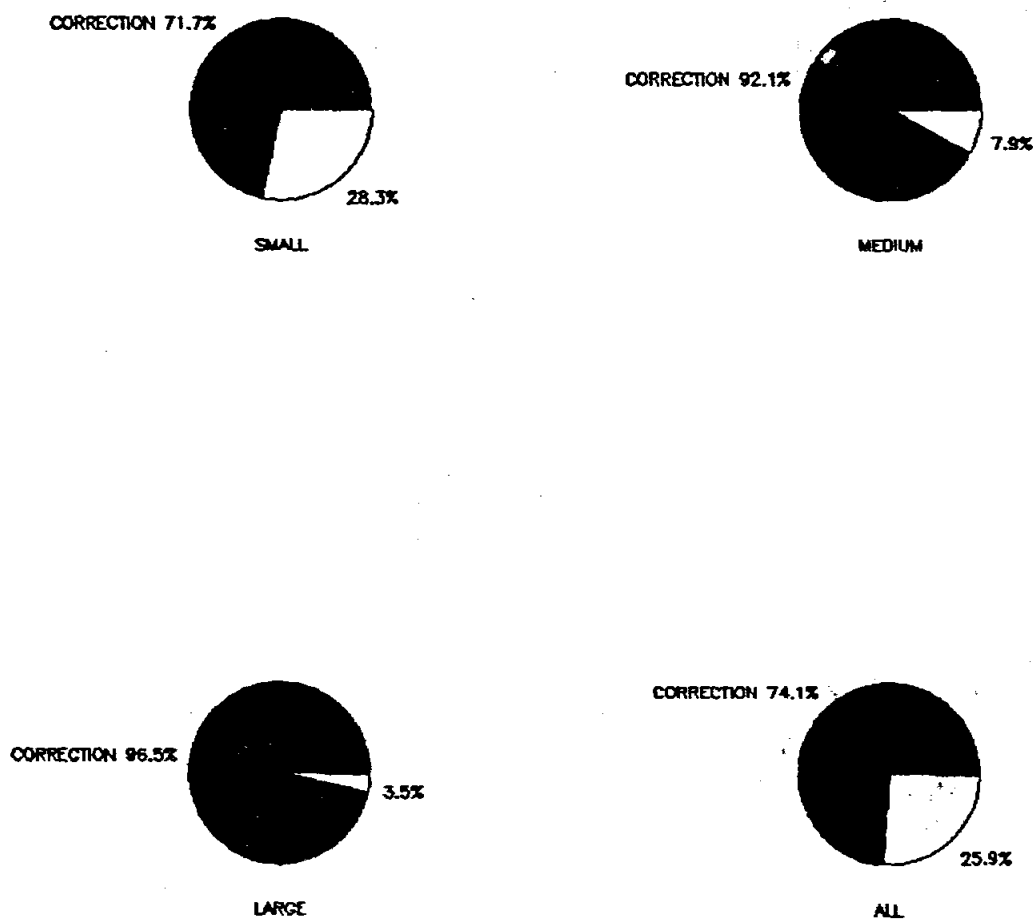
SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	15546 (1079) 83.9%	3061 (156) 98.0%	346 (83) 99.9%	18953 (1050) 86.2%	487233 (18403) 87.8%	585438 (25971) 98.1%	351056* (100266) 100.0%	1423727 (105376) 94.7%
35	18157 (1257) 80.2%	3304 (129) 97.0%	777 (80) 99.1%	22238 (1320) 82.9%	515338 (17058) 84.9%	636433 (13917) 96.3%	1102774 (149310) 99.1%	2254546 (151279) 94.7%
36	4539 (583) 63.9%	2591 (96) 96.5%	746 (168) 94.8%	7876 (598) 74.5%	176264 (17279) 76.5%	536462 (9299) 97.1%	1152759 (193759) 97.5%	1865485 (191763) 94.9%
37	2214 (441) 55.7%	1131 (89) 95.0%	413 (91) 99.3%	3757 (446) 67.3%	80298 (19384) 63.2%	229699 (24531) 96.0%	1474248 (217195) 97.4%	1784245 (215071) 94.9%
38	2260 (478) 84.0%	865 (96) 90.4%	322* (107) 77.3%	3447 (476) 84.9%	94810 (14075) 90.6%	173822 (22647) 89.4%	403657* (120817) 87.7%	672289 (129754) 88.5%
39	4916 (614) 75.0%	619* (1129) 77.6%	338* (216) 100.0%	5873 (1324) 76.4%	134406 (17021) 81.0%	126649* (232079) 84.7%	209369* (120490) 100.0%	470424* (212221) 89.7%
41	3568 (817) 80.7%	320* (119) 62.8%	...	3888 (830) 78.9%	104297 (22714) 88.7%	51926* (27319) 63.7%	...	156223 (34762) 78.4%
42	14921 (1986) 74.5%	1409 (304) 95.1%	82* (54) 99.5%	16411 (2052) 76.0%	406818 (50104) 83.4%	248926 (55375) 96.2%	74830* (49333) 100.0%	730574 (70402) 88.9%
45	2473* (792) 76.3%	590* (397) 99.9%	144* (56) 97.6%	3206* (854) 80.6%	67879* (22174) 87.6%	109332* (75829) 100.0%	258326* (79623) 97.8%	435537 (101568) 96.6%
48	6011 (1157) 40.9%	872 (201) 96.7%	34* (21) 99.0%	6917 (1189) 44.2%	209117* (60216) 49.1%	168317* (42649) 95.5%	70083* (43687) 100.0%	447518 (91137) 66.6%
49	7497 (1874) 91.3%	1862* (567) 100.0%	173* (99) 99.8%	9531 (2061) 93.0%	260110 (59959) 96.6%	425470* (151076) 100.0%	146565* (65566) 100.0%	832144 (186869) 98.9%
50	22169 (2195) 73.0%	1711* (451) 95.0%	...	23880 (2248) 74.3%	495377 (65074) 78.6%	272107* (75159) 96.1%	...	767484 (111349) 84.0%
51	7174 (1231) 78.7%	237* (237) 100.0%	...	7410 (1270) 79.2%	147861* (41403) 79.9%	27013* (27013) 100.0%	...	174874* (53871) 82.5%
55	11207 (2169) 59.2%	91* (84) 14.7%	...	11298 (2190) 57.8%	184862 (41820) 59.8%	11413* (10448) 11.6%	...	196275 (45803) 48.2%
72	11493 (1512) 55.7%	582* (180) 86.2%	13* (19) 100.0%	12089 (1561) 56.7%	231762 (39116) 61.0%	71681* (23137) 87.2%	10670* (15114) 100.0%	314113 (53290) 66.4%
73	8962 (1597) 54.1%	1161 (225) 78.0%	328* (141) 96.3%	10452 (1618) 56.8%	209285 (40887) 49.7%	280195 (54144) 80.1%	309116* (116237) 94.0%	798595 (106863) 72.6%
75	18851 (3436) 72.0%	59* (60) 99.7%	...	18910 (3448) 72.1%	279449 (49800) 67.6%	8238* (8380) 100.0%	...	287688 (51371) 68.3%
76	6366 (1413) 65.3%	123* (94) 100.0%	...	6490 (1432) 65.7%	122947 (22914) 68.9%	24341* (19716) 100.0%	...	147288 (34683) 72.6%
80	1970* (616) 69.4%	2046 (282) 94.5%	1969 (294) 95.5%	5985 (569) 84.7%	81906 (18585) 80.6%	491538 (76729) 92.0%	2842421 (376570) 94.0%	3415865 (373035) 93.4%
ALL	319689 (9124) 71.6%	45617 (1013) 92.1%	9099 (387) 96.5%	374404 (8908) 74.0%	8422960 (163737) 76.4%	9081729 (150510) 92.9%	12064906 (491298) 96.8%	29569595 (491585) 88.9%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE IV - 142**  
**WORKERS IN PLANTS WHICH TAKE CORRECTIVE MEASURES**  
**IF EMPLOYEES VIOLATE SAFETY RULES BY PLANT SIZE**  
**(NOES 1981-1983)**



**FIGURE IV - 143**  
**PLANTS WHICH TAKE CORRECTIVE MEASURES**  
**IF EMPLOYEES VIOLATE SAFETY RULES**  
**NOES 1981-1983)**



## Intent

**This item was displayed on the questionnaire as:**

**1 Yes**  
**2 No (Skip to Question 62)**

### Analysis

Figure IV-144	Plants which use economic penalties for safety rule violations (by major industrial group)
Figure IV-145	Plants which use economic penalties for safety rule violations (by 2-digit SIC)
Figure IV-146	Workers in plants which use economic penalties for safety rule violations by plant size
Figure IV-147	Plants which use economic penalties for safety rule violations

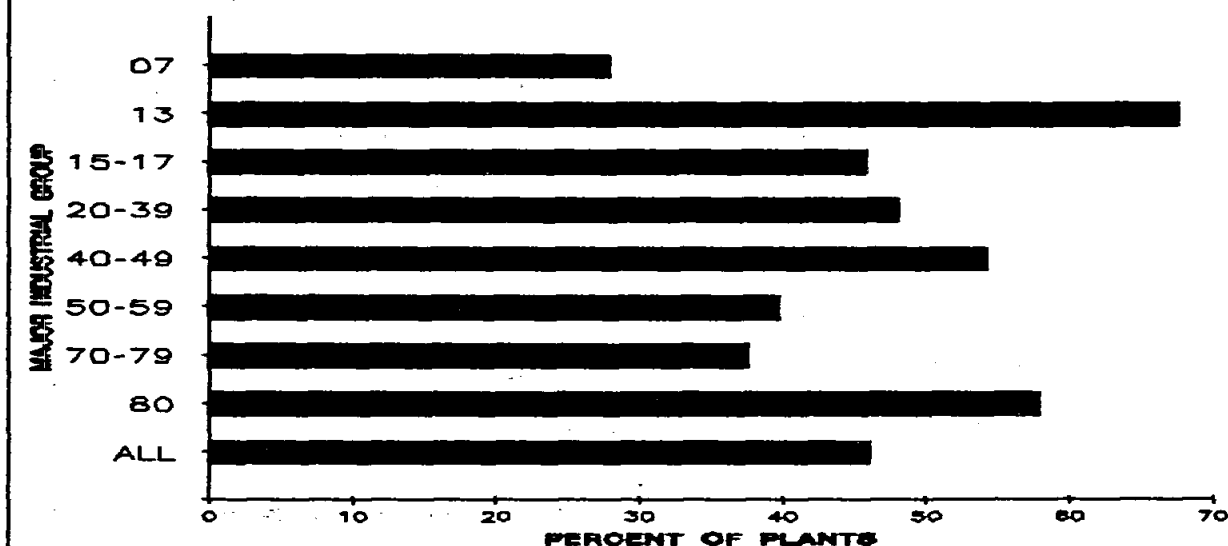
**Table IV-85**

**Number and percent of plants and employees in plants which use economic penalties when safety rules are violated (by major industrial group)**

**Table IV-86**

**Number and percent of plants and employees in plants which use economic penalties when safety rules are violated (by 2-digit SIC)**

**FIGURE IV - 144**  
**PLANTS WHICH USE ECONOMIC PENALTIES**  
**FOR SAFETY RULE VIOLATIONS**  
**(NOES 1981-1983)**



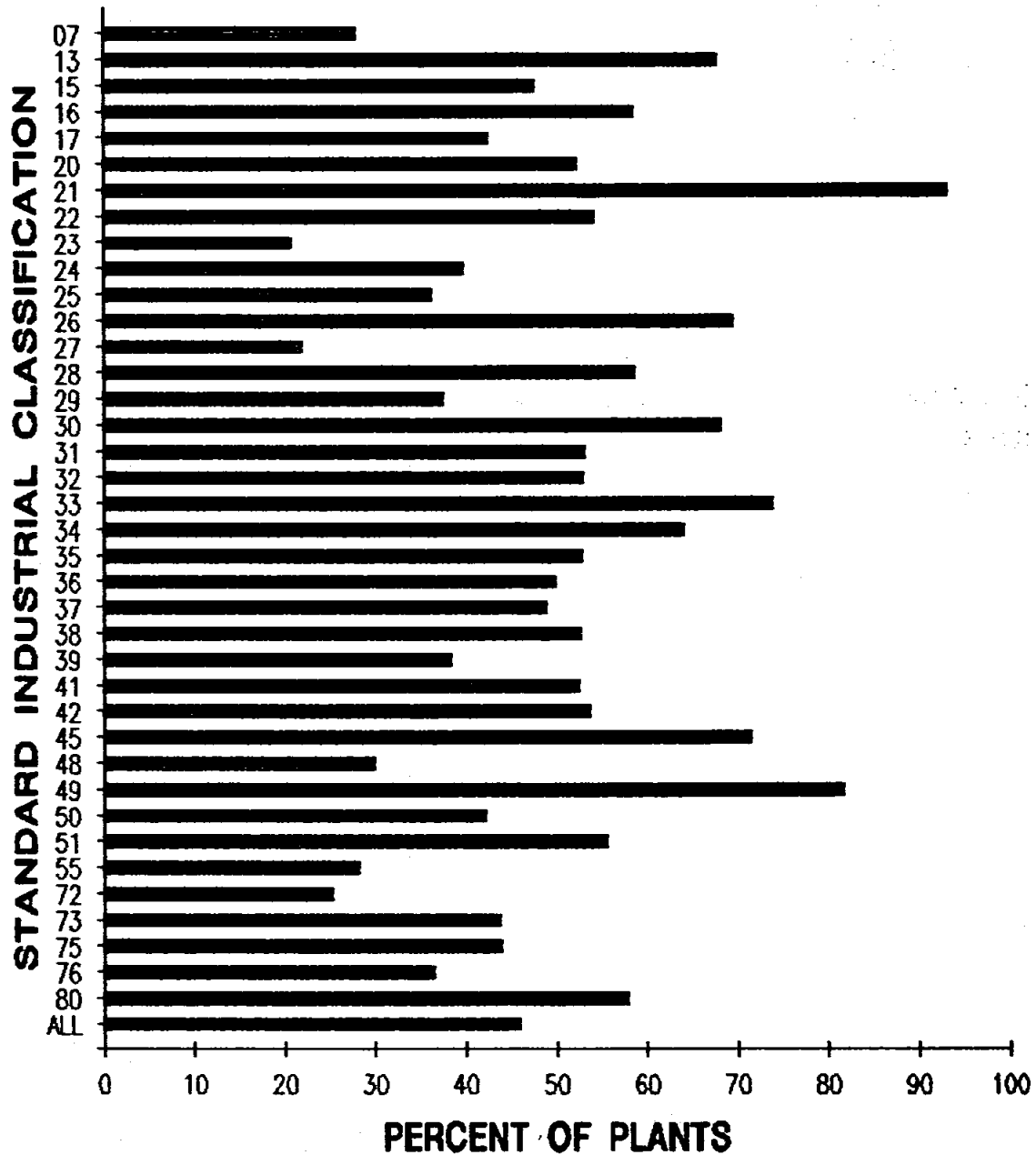
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-85

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 USE ECONOMIC PENALTIES WHEN SAFETY RULES ARE VIOLATED

MAJOR GROUP	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	1511* (690) 27.2%	70* (67) 100.0%	...	1581* (669) 28.1%	37912* (17064) 36.6%	7009* (6680) 100.0%	...	44921* (15742) 40.6%
13	5547* (1433) 64.5%	961* (323) 94.3%	46* (52) 100.0%	6554* (1690) 67.8%	141105 (28673) 67.5%	163920* (56580) 94.2%	31383* (35291) 100.0%	336408* (95923) 81.2%
15-17	42498 (2331) 45.1%	2747 (419) 66.3%	202* (126) 83.6%	45447 (2217) 46.0%	1072159 (54746) 51.1%	499599 (79484) 67.8%	205974* (92441) 87.3%	1777731 (104974) 57.9%
20-39	62404 (3063) 40.7%	24367 (1416) 76.7%	5341 (246) 85.2%	92112 (3900) 48.2%	2280933 (89322) 49.4%	4977142 (293260) 78.0%	6956513 (314927) 84.2%	14214587 (562239) 73.8%
40-49	27035 (2623) 50.9%	4947 (916) 84.7%	362* (124) 77.4%	32344 (2718) 54.4%	889658 (87209) 62.0%	1010637 (207302) 87.6%	476816 (105403) 83.1%	2377111 (247081) 75.2%
50-59	22667 (3284) 38.8%	1687* (432) 63.5%	...	24354 (3205) 39.9%	508668 (81451) 45.2%	270390* (70793) 66.1%	...	779058 (105894) 50.8%
70-79	26997 (2491) 36.9%	1401 (281) 59.7%	294* (141) 83.1%	28692 (2409) 37.8%	517397 (49273) 37.1%	269919 (46274) 58.1%	260951* (108870) 76.8%	1048267 (106265) 47.7%
80	976* (330) 34.4%	1584 (263) 73.1%	1545 (255) 75.0%	4105 (497) 58.1%	48879* (13722) 48.1%	373119 (72130) 69.8%	2279171 (338207) 75.4%	2701168 (333665) 73.8%
ALL	189635 (6429) 42.2%	37765 (1861) 75.5%	7791 (423) 82.5%	235190 (6866) 46.2%	5496709 (170131) 49.6%	7571736 (388452) 76.8%	10210806 (496302) 81.9%	23279252 (729019) 69.7%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE IV - 145**  
**PLANTS WHICH USE ECONOMIC PENALTIES**  
**FOR SAFETY RULE VIOLATIONS**  
**(NOES 1981-1983)**



NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
USE ECONOMIC PENALTIES WHEN SAFETY RULES ARE VIOLATED

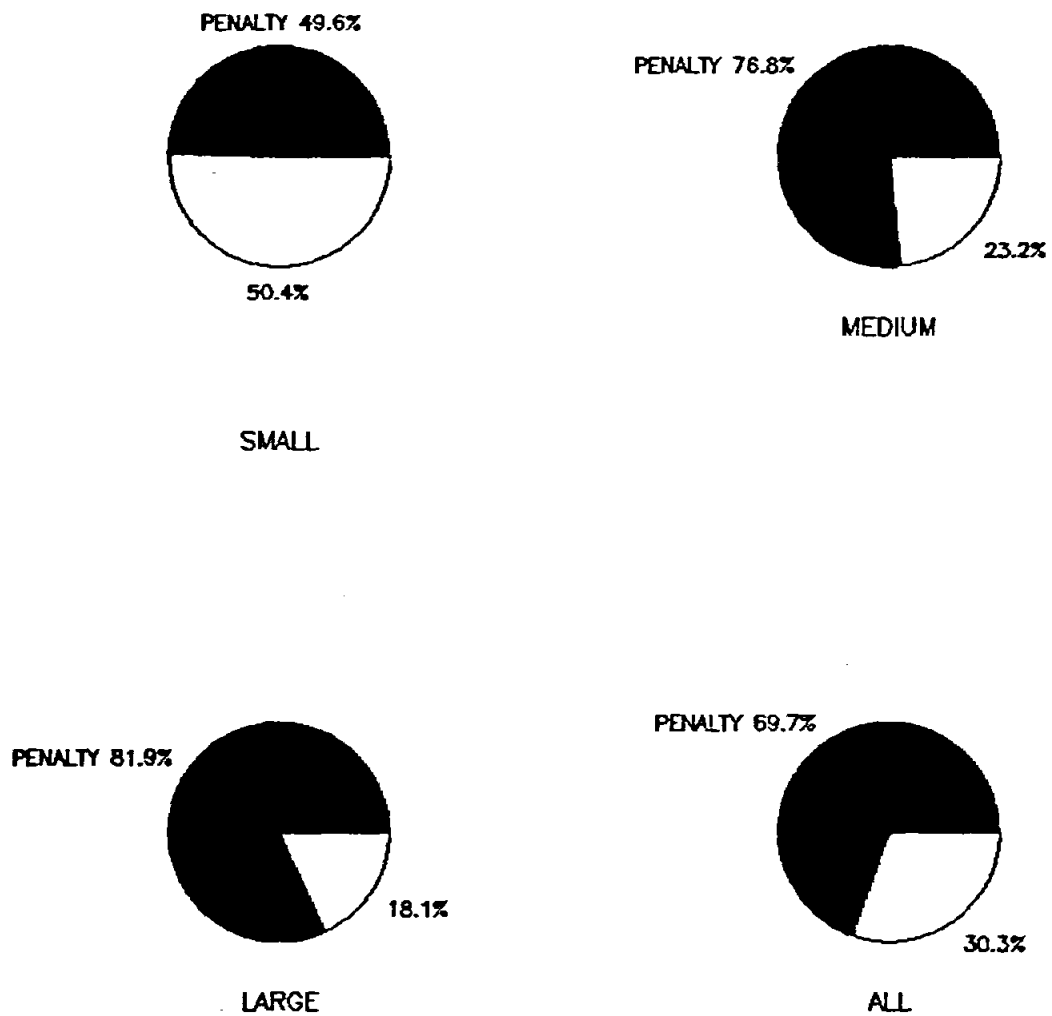
SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	1511* (690) 27.2%	70* (67) 100.0%	...	1581* (669) 28.1%	37912* (17064) 36.6%	7009* (6680) 100.0%	...	44921* (15742) 40.6%
13	5547* (1433) 64.5%	961* (323) 94.3%	46* (52) 100.0%	6554* (1690) 67.8%	141105 (28673) 67.5%	163920* (56580) 94.2%	31383* (35291) 100.0%	336408* (95923) 81.2%
15	11493 (1103) 46.1%	900 (188) 81.3%	112* (97) 83.3%	12505 (1116) 47.8%	269205 (33776) 47.8%	155630 (37144) 78.5%	116685* (68268) 86.6%	541520 (76490) 60.4%
16	6789 (1165) 60.2%	462* (170) 41.3%	90* (66) 84.0%	7340 (1190) 58.7%	184418 (35144) 64.9%	98050* (40408) 47.2%	89288* (54040) 88.2%	371756 (85247) 62.7%
17	24216 (2182) 41.7%	1386* (358) 72.2%	...	25602 (2130) 42.6%	618536 (46240) 49.4%	245919* (72878) 74.3%	...	864455 (73317) 54.6%
20	4585 (732) 40.2%	2840 (368) 88.3%	534 (124) 95.5%	7958 (886) 52.4%	175473 (25544) 45.2%	604179 (90664) 89.7%	473800 (106393) 96.3%	1253452 (109358) 80.7%
21	30* (43) 100.0%	...	71* (53) 90.2%	102* (63) 93.2%	1866* (2685) 100.0%	...	96114* (64119) 85.7%	97980* (63568) 85.9%
22	1268 (266) 43.2%	1083 (128) 68.2%	265* (82) 88.7%	2616 (273) 54.3%	53613 (8792) 50.6%	248352 (30008) 71.6%	200267* (78947) 76.7%	502232 (76084) 70.3%
23	1635* (502) 13.1%	1476 (209) 47.6%	200* (90) 82.6%	3311 (507) 20.9%	73044 (17416) 17.2%	301890 (39021) 49.5%	179306* (76896) 86.0%	554240 (68754) 44.6%
24	3736 (580) 34.9%	922 (164) 80.3%	104* (74) 100.0%	4762 (592) 39.8%	158800 (23493) 52.3%	145195 (26029) 79.1%	92355* (52501) 100.0%	396349 (74643) 68.4%
25	1207* (382) 29.0%	622* (166) 58.6%	119* (75) 99.6%	1948 (408) 36.4%	55299 (13781) 39.8%	155245* (39827) 60.5%	122998* (62394) 100.0%	333542 (75318) 64.3%
26	2600 (549) 63.2%	1300 (262) 82.8%	203* (74) 94.8%	4103 (651) 69.6%	96471 (14266) 70.1%	238747 (49330) 84.8%	166625* (67320) 80.5%	501843 (99367) 80.2%
27	3160 (574) 17.4%	1099 (134) 58.7%	222* (93) 70.2%	4481 (581) 22.1%	133449 (28345) 27.9%	233213 (35618) 64.6%	219021* (65840) 63.3%	585683 (82188) 49.4%
28	3129 (468) 50.7%	1096 (89) 94.5%	309 (68) 81.4%	4535 (487) 58.8%	121554 (12452) 67.3%	248788 (26707) 95.4%	399322* (108520) 83.8%	769664 (111469) 83.8%
29	249* (178) 24.6%	178* (124) 60.9%	101* (42) 100.0%	528* (232) 37.6%	17737* (11943) 43.3%	30529* (18332) 48.3%	117545* (70259) 100.0%	165811* (78962) 74.8%
30	4185 (918) 62.4%	1421 (324) 92.4%	180* (67) 80.3%	5786 (1099) 68.3%	160596 (24951) 71.4%	266667 (57144) 90.5%	208455* (70884) 89.2%	635718 (92262) 84.4%
31	359* (201) 38.5%	432 (97) 75.9%	22* (20) 87.3%	812* (255) 53.3%	12383* (5865) 49.8%	105231* (28642) 77.7%	11650* (10428) 74.4%	129263* (34159) 73.4%
32	4182 (1024) 47.5%	944 (146) 93.3%	184* (71) 99.9%	5310 (1014) 53.1%	138414 (22616) 58.4%	198819 (32000) 95.1%	128993* (49687) 100.0%	466225 (53034) 81.1%
33	2623 (533) 63.5%	1443 (137) 98.3%	324 (61) 96.0%	4391 (562) 73.9%	92949 (16227) 67.1%	305873 (29406) 98.3%	609529 (84534) 98.1%	1008352 (89452) 94.1%



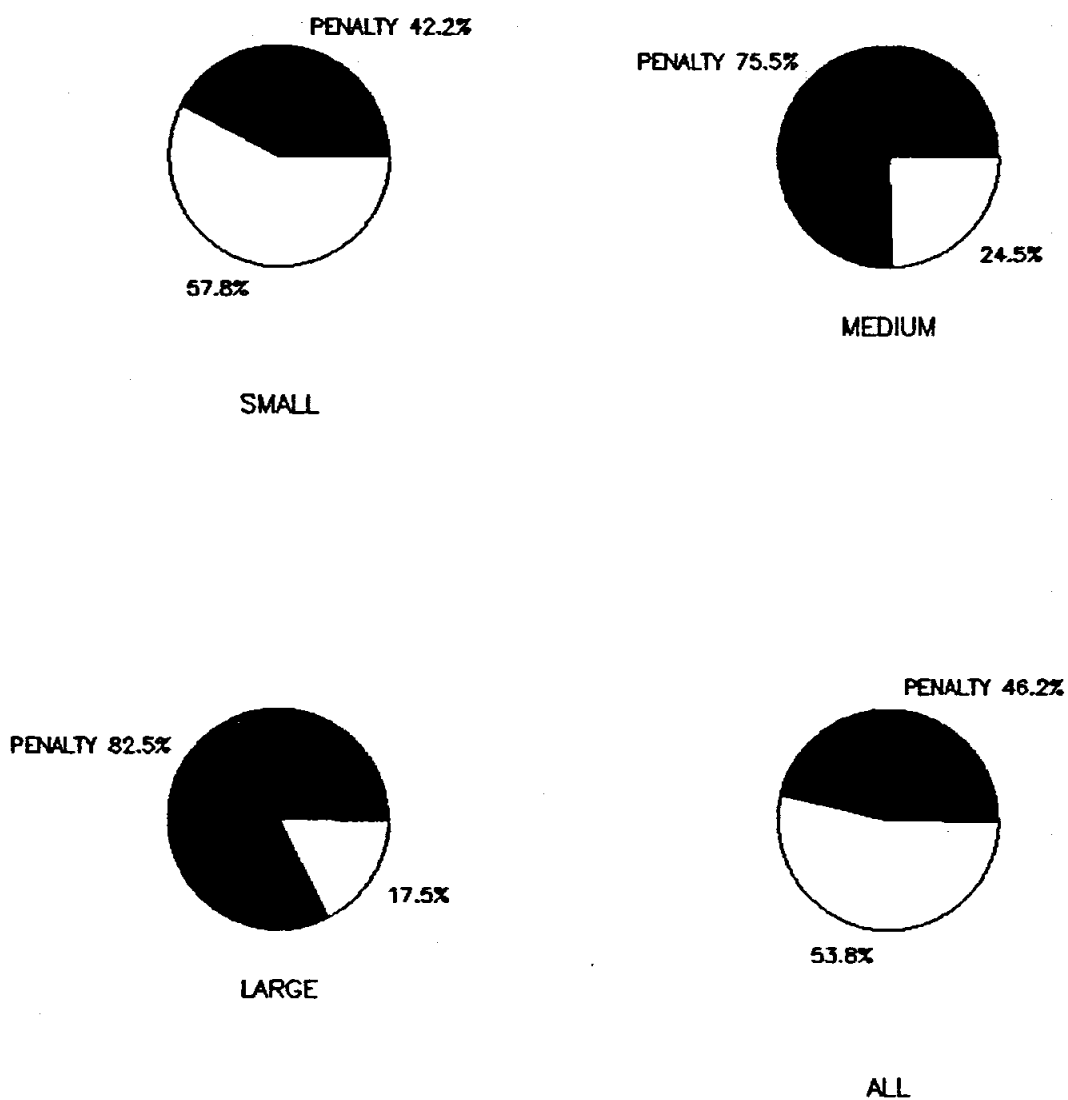
SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	11184 (1277) 60.4%	2617 (250) 83.8%	305* (85) 88.0%	14105 (1195) 64.2%	366111 (27981) 66.0%	520783 (35419) 87.3%	324545* (104665) 92.4%	1211439 (110296) 80.6%
35	10759 (1312) 47.5%	2808 (214) 82.5%	662 (82) 84.4%	14229 (1288) 53.0%	339565 (27887) 56.0%	525542 (41514) 79.5%	855781 (107821) 76.9%	1720888 (117901) 72.3%
36	2669 (547) 37.6%	2003 (228) 74.6%	620* (171) 78.8%	5292 (594) 50.0%	112009 (15892) 48.6%	406540 (60704) 73.6%	897804 (159525) 75.9%	1416352 (178533) 72.1%
37	1398 (329) 35.2%	950 (121) 79.8%	391 (97) 94.0%	2738 (356) 49.1%	53931* (15259) 42.5%	209445 (28467) 87.6%	1436385 (207867) 94.9%	1699760 (208200) 90.4%
38	1235* (432) 45.9%	711 (106) 74.3%	199* (95) 47.8%	2145 (412) 52.8%	49311* (12958) 47.1%	138218 (23818) 71.1%	212649* (112312) 46.2%	400178* (118131) 52.7%
39	2213 (495) 33.8%	421* (775) 52.7%	328* (221) 97.0%	2962* (976) 38.5%	68359 (15934) 41.2%	93887* (180410) 62.8%	203369* (123186) 97.1%	365616* (175746) 69.7%
41	2374* (854) 53.7%	223* (153) 43.8%	...	2597* (852) 52.7%	61956* (17549) 52.7%	40408* (34747) 49.6%	...	102364* (35334) 51.4%
42	10276 (1515) 51.3%	1300 (290) 87.7%	56* (43) 68.8%	11632 (1635) 53.9%	314927 (46951) 64.6%	232548 (53959) 89.8%	54719* (40786) 73.1%	602194 (67218) 73.3%
45	2126* (737) 65.6%	590* (397) 99.9%	134* (53) 91.2%	2849* (826) 71.6%	57939* (20848) 74.8%	109332* (75829) 100.0%	246924* (79117) 93.4%	414195* (105441) 91.8%
48	4045* (1254) 27.5%	649 (155) 72.0%	19* (16) 56.8%	4714* (1244) 30.1%	154871* (57450) 36.4%	127065* (38334) 72.1%	37029* (29526) 52.8%	318966 (77554) 47.5%
49	6401* (1797) 77.9%	1862* (567) 100.0%	120* (90) 69.2%	8383 (1997) 81.8%	250019 (60418) 92.8%	425470* (151076) 100.0%	120133* (61318) 82.0%	795622 (185045) 94.6%
50	12143 (1868) 40.0%	1450 (361) 80.5%	...	13593 (1857) 42.3%	291775 (47716) 47.2%	243378* (67863) 85.9%	...	541153 (93852) 59.2%
51	4974* (1389) 54.6%	237* (237) 100.0%	...	5211* (1460) 55.7%	104841* (43149) 56.7%	27013* (27013) 100.0%	...	131853* (55095) 62.2%
55	5550 (1318) 29.3%	...	...	5550 (1318) 28.4%	106052* (30738) 34.3%	...	...	106052* (30738) 26.0%
72	4921* (1395) 23.9%	478* (164) 70.8%	13* (19) 100.0%	5413* (1435) 25.4%	107365 (24111) 28.3%	59833* (21543) 72.8%	10670* (15114) 100.0%	177868 (39397) 37.6%
73	7072 (1506) 42.7%	741 (174) 49.8%	281* (135) 82.3%	8094 (1508) 44.0%	162518 (35697) 38.6%	177507 (34967) 50.8%	250280* (104326) 76.1%	590305 (102795) 53.7%
75	11504 (1981) 43.9%	59* (60) 99.7%	...	11563 (1982) 44.1%	188746 (33648) 45.7%	8238* (8380) 100.0%	...	196984 (34008) 46.7%
76	3499 (776) 35.9%	123* (94) 100.0%	...	3622 (765) 36.7%	58769 (13596) 32.9%	24341* (19716) 100.0%	...	83110* (22888) 41.0%
80	976* (330) 34.4%	1584 (263) 73.1%	1545 (255) 75.0%	4105 (497) 58.1%	48879* (13722) 48.1%	373119 (72130) 69.8%	2279171 (338207) 75.4%	2701168 (333665) 73.8%
ALL	187821 (7005) 42.0%	37490 (1159) 75.7%	7774 (427) 82.5%	233085 (7320) 46.1%	5446763 (174457) 49.4%	7511528 (197640) 76.9%	10201801 (527110) 81.9%	23160092 (617814) 69.6%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE IV - 146**  
**WORKERS IN PLANTS WHICH USE ECONOMIC PENALTIES**  
**FOR SAFETY RULE VIOLATIONS BY PLANT SIZE**  
**(NOES 1981-1983)**



**FIGURE IV - 147**  
**PLANTS WHICH USE ECONOMIC PENALTIES**  
**FOR SAFETY RULE VIOLATIONS**  
**(NOES 1981-1983)**



**NOES QUESTIONNAIRE ITEM NO. 61**  
**Assessment of Economic Penalties in the Past Year as a**  
**Result of a Safety Rule Enforcement Policy**

**Intent**

The intent of this question was to determine if management-directed actions which involved economic loss to the worker(s) concerned had been taken in the past year for safety rule violations.

This item was displayed on the questionnaire as:

61. Have any economic penalties been assessed in the past 12 months?

- 1 Yes
- 2 No, we know of no instances where violations of company policy have occurred withing the last 12 months.
- 3 No, although we know that there was a minimum of one violation of company policy withing the last 12 months.

**Notes**

This question was asked only of those who responded that their corrective measures for safety rule violations involved economic penalties.

As in question 60, economic penalties imposed by management resulted in an economic loss to the worker(s) involved. Examples included fines, dismissal, work hour reduction, suspension, or loss of seniority.

Corrective actions initiated by sources other than facility management were not considered affirmative responses to this question.

**Analysis**

Two analyses of the responses to question 61 are presented.

- (1) Response 61.1 - Economic penalties assessed in the last year for safety rule violations

The estimated proportions of plants and workers in plants which imposed economic penalties (fines) on workers in the past year for safety rule violations are displayed in Figures IV-148, IV-149, IV-150, and IV-151.

- |               |  |
|---------------|--|
| Figure IV-148 | Workers in plants which fined employees for safety rule violations in the past year<br>(by major industrial group) |
| Figure IV-149 | Workers in plants which fined employees for safety rule violations in the past year<br>(by 2-digit SIC)            |
| Figure IV-150 | Plants which fined employees for safety rule violations in the past year<br>(by major industrial group)            |

**Figure IV-151      Plants which fined workers for safety rule violations  
in the past year  
                         (by 2-digit SIC)**

- (2) Response 61.1, 61.2, or 61.3 - Categories of economic penalties imposed  
in the last year**

**The estimates of the plants which have a policy of assessing economic  
penalties as part of their corrective measures for safety rule  
violations, by category of penalty assessment, and workers in those  
plants (by number and proportion of the total) are displayed in Figures  
IV-152 and IV-153, and Tables IV-87 and IV-88.**

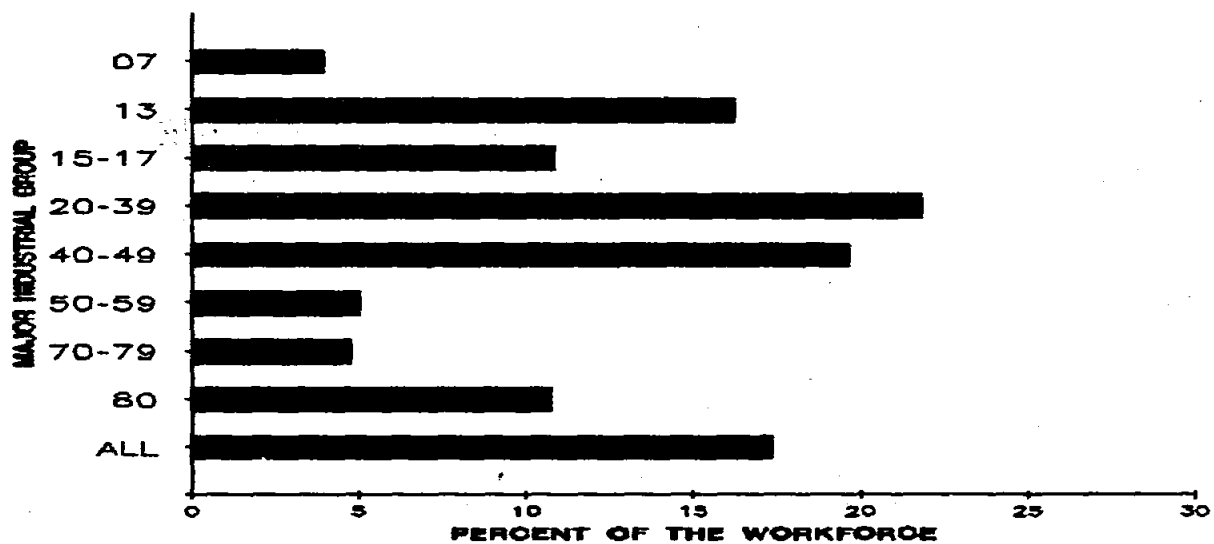
**Figure IV-152      Workers in plants by plant size and category of  
economic penalty for safety rule violations**

**Figure IV-153      Plants by size and category of economic penalty for  
safety rule violations**

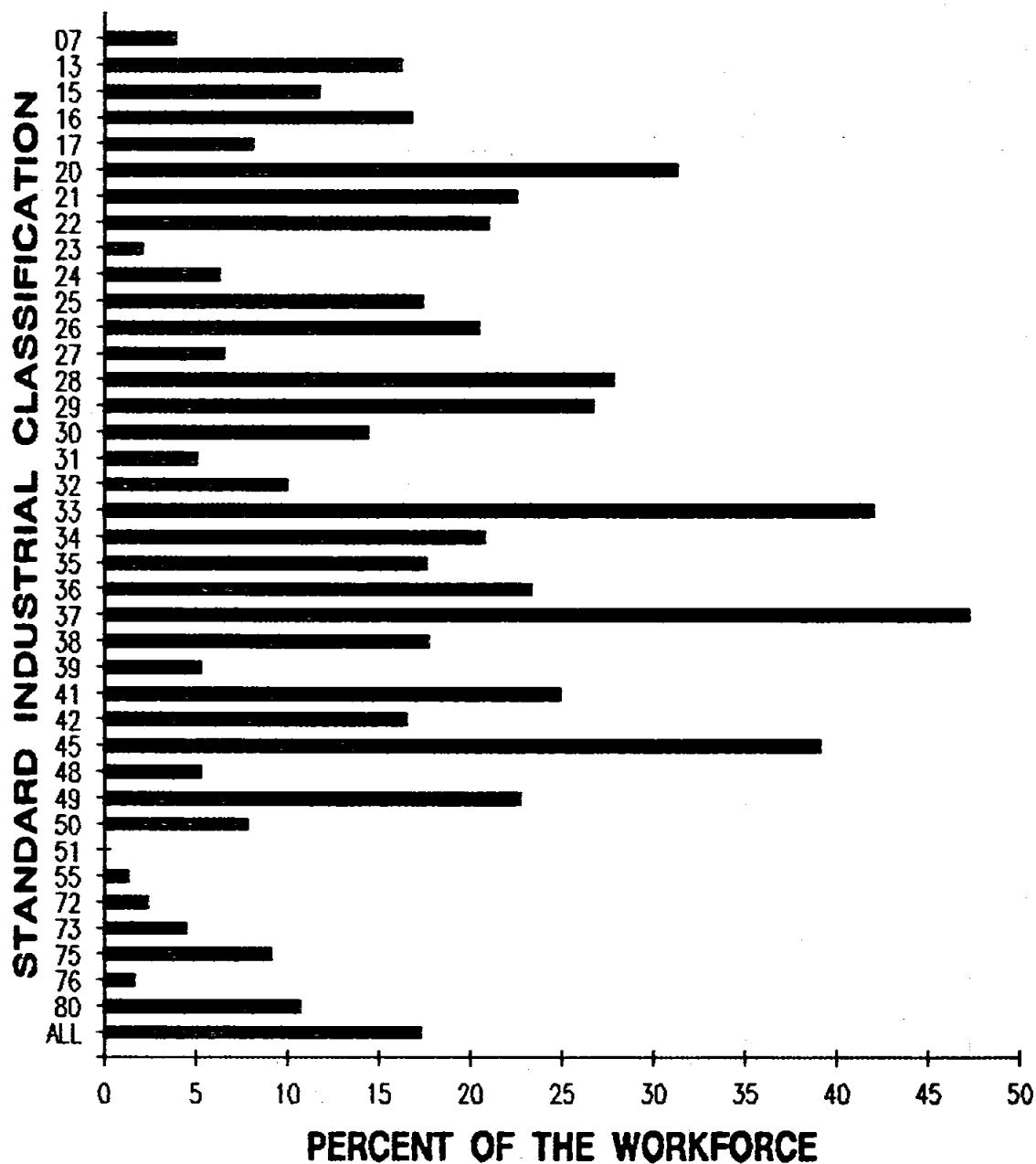
**Table IV-87        Number and percent of plants and workers in plants by  
category of economic penalty for safety rule violations  
(by major industrial group)**

**Table IV-88        Number and percent of plants and workers in plants by  
category of economic penalty for safety rule violations  
(by 2-digit SIC)**

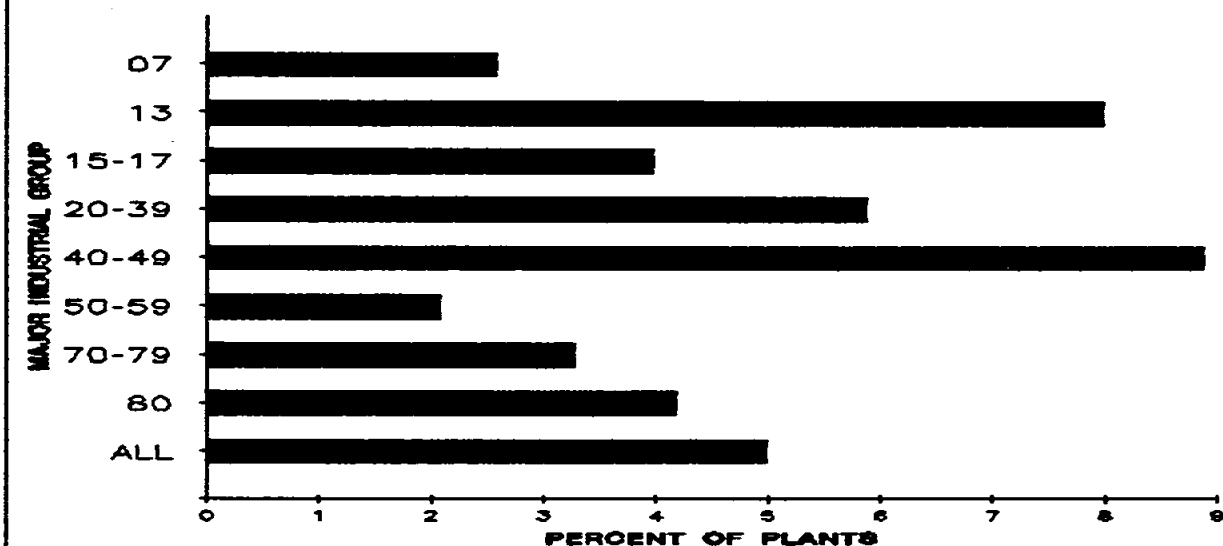
**FIGURE IV - 148**  
**WORKERS IN PLANTS WHICH FINED EMPLOYEES FOR**  
**SAFETY RULE VIOLATIONS IN THE PAST YEAR**  
**(NOS 1981-1987)**



**FIGURE IV - 149**  
**WORKERS IN PLANTS WHICH FINED EMPLOYEES FOR**  
**SAFETY RULE VIOLATIONS IN THE PAST YEAR**  
**(NOES 1981-1983)**



**FIGURE IV - 150**  
**PLANTS WHICH FINED EMPLOYEES FOR SAFETY**  
**RULE VIOLATIONS IN THE PAST YEAR**  
**(NOES 1981-1983)**



NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-87

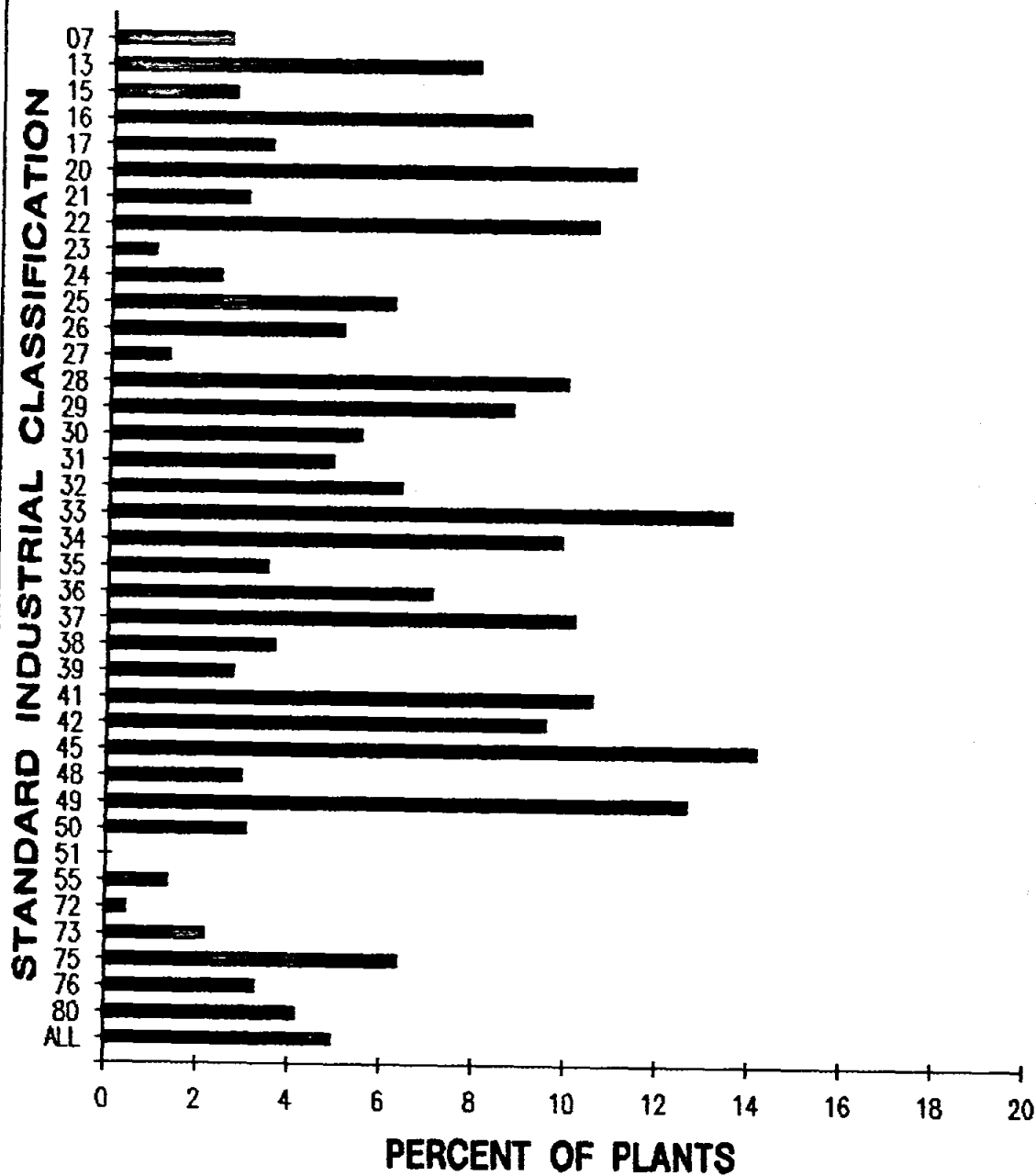
NUMBER AND PERCENT OF PLANTS AND WORKERS IN PLANTS BY  
CATEGORY OF ECONOMIC PENALTY FOR SAFETY RULE VIOLATION

MAJOR GROUP	PLANTS			WORKERS		
	ASSESSED PENALTIES	NO VIOLATIONS	UNPENALIZED VIOLATIONS	ASSESSED PENALTIES	NO VIOLATIONS	UNPENALIZED VIOLATIONS
07	149* (147) 2.6%	1294* (660) 23.0%	139* (137) 2.5%	4456* (4395) 4.0%	36854* (15135) 33.3%	3611* (3569) 3.3%
13	775* (401) 8.0%	4831 (1140) 50.0%	948* (497) 9.8%	67546* (23501) 16.3%	207332* (64535) 50.0%	61530* (23490) 14.9%
15-17	3974 (913) 4.0%	34562 (1983) 35.0%	6912 (1132) 7.0%	335981 (80367) 10.9%	1162435 (70494) 37.8%	279315 (66357) 9.1%
20-39	11266 (1109) 5.9%	63693 (3040) 33.3%	17153 (1847) 9.0%	4217148 (280250) 21.9%	7041364 (335146) 36.6%	2956075 (286842) 15.3%
40-49	5290 (987) 8.9%	22580 (2686) 38.0%	4475 (873) 7.5%	621565 (119300) 19.7%	1411145 (235788) 44.6%	344401 (72200) 10.9%
50-59	1275* (574) 2.1%	19404 (3301) 31.8%	3675* (1084) 6.0%	78411* (27893) 5.1%	578490 (102260) 37.7%	122157* (35379) 8.0%
70-79	2517* (783) 3.3%	24370 (2469) 32.1%	1805* (691) 2.4%	104627 (22500) 4.8%	797155 (103773) 36.3%	146485* (40464) 6.7%
80	294* (98) 4.2%	3490 (441) 49.4%	320* (115) 4.5%	394595* (112756) 10.8%	2044493 (312489) 55.9%	262080 (55657) 7.2%
ALL	25539 (2042) 5.0%	174224 (6270) 34.2%	35427 (2718) 7.0%	5824328 (337344) 17.4%	13279269 (544204) 39.7%	4175654 (313761) 12.5%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
...No facilities observed.



**FIGURE IV - 151**  
**PLANTS WHICH FINED WORKERS FOR SAFETY**  
**VIOLATIONS IN THE PAST YEAR**  
 (NOES 1981-1983)



NUMBER AND PERCENT OF PLANTS AND WORKERS IN PLANTS BY  
CATEGORY OF ECONOMIC PENALTY FOR SAFETY RULE VIOLATION

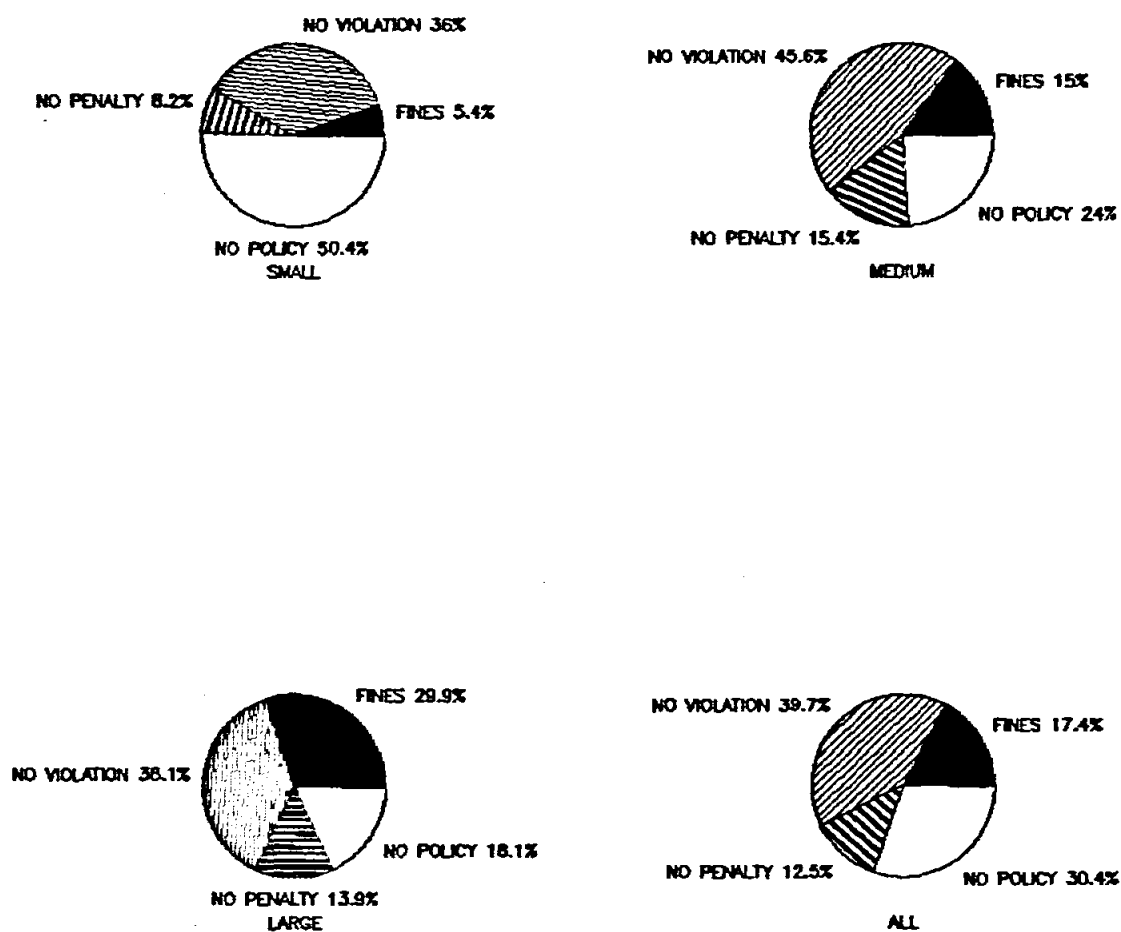
SIC CODE	PLANTS			WORKERS		
	ASSESSED PENALTIES	NO VIOLATIONS	UNPENALIZED VIOLATIONS	ASSESSED PENALTIES	NO VIOLATIONS	UNPENALIZED VIOLATIONS
07	149* (147) 2.6%	1294* (660) 23.0%	139* (137) 2.5%	4456* (4395) 4.0%	36854* (15135) 33.3%	3611* (3569) 3.3%
13	775* (401) 8.0%	4831 (1140) 50.0%	948* (497) 9.8%	67546* (23501) 16.3%	207332* (64535) 50.0%	61530* (23490) 14.9%
15	715* (394) 2.7%	9670 (1136) 37.0%	2120* (650) 8.1%	106135* (69321) 11.8%	347799 (42692) 38.8%	87587* (23274) 9.8%
16	1136* (524) 9.1%	4566 (1034) 36.5%	1638* (589) 13.1%	100122* (36948) 16.9%	172097 (42759) 29.0%	99538* (55563) 16.8%
17	2122* (609) 3.5%	20326 (2185) 33.8%	3154* (878) 5.3%	129725* (35753) 8.2%	642540 (61256) 40.6%	92191 (19697) 5.8%
20	1736* (524) 11.4%	4482 (795) 29.5%	1740* (464) 11.5%	488232* (122670) 31.4%	530840 (74148) 34.2%	234381* (61074) 15.1%
21	3* (4) 3.0%	62* (46) 56.5%	37* (45) 33.7%	25744* (28069) 22.6%	66982* (42632) 58.8%	5254* (9815) 4.6%
22	512* (153) 10.6%	1482 (367) 30.7%	622* (212) 12.9%	150460* (42110) 21.1%	248419* (68335) 34.8%	103353* (30922) 14.5%
23	153* (76) 1.0%	2695 (491) 17.0%	463* (143) 2.9%	26835* (13596) 2.2%	420092 (66050) 33.8%	107312* (32604) 8.6%
24	281* (175) 2.4%	3867 (713) 32.3%	614* (359) 5.1%	37336* (21817) 6.4%	276988* (78326) 47.8%	82025* (39556) 14.2%
25	332* (179) 6.2%	1430 (282) 26.7%	186* (163) 3.5%	90802* (32662) 17.5%	219132* (69188) 42.3%	23608* (19875) 4.6%
26	300* (128) 5.1%	2658 (624) 45.1%	1145* (300) 19.4%	128994* (59182) 20.6%	223696* (57864) 35.7%	149154* (59523) 23.8%
27	272* (134) 1.3%	3697 (584) 18.2%	512* (134) 2.5%	78335* (46839) 6.6%	435919 (78567) 36.8%	71429* (34928) 6.0%
28	769 (187) 10.0%	2896 (392) 37.6%	869 (213) 11.3%	255941* (87857) 27.9%	350216 (61023) 38.2%	163507* (46977) 17.8%
29	124* (129) 8.8%	157* (96) 11.2%	248* (196) 17.6%	59433* (58301) 26.8%	55262* (35434) 24.9%	51116* (33386) 23.0%
30	466* (227) 5.5%	3773 (776) 44.5%	1546* (477) 18.3%	109034* (33730) 14.5%	300565 (62887) 39.9%	226120* (68233) 30.0%
31	74* (74) 4.9%	625* (248) 41.0%	113* (60) 7.4%	9224* (10495) 5.2%	95184* (33292) 54.1%	24855* (13886) 14.1%
32	642* (256) 6.4%	3526 (804) 35.3%	1142* (301) 11.4%	58257* (25149) 10.1%	303636 (53579) 52.8%	104332* (36836) 18.1%
33	805* (243) 13.6%	2876 (624) 48.4%	709* (277) 11.9%	450661 (69289) 42.1%	311654* (85681) 29.1%	246037* (71111) 23.0%

SIC CODE	PLANTS			WORKERS		
	ASSESSED PENALTIES	NO VIOLATIONS	UNPENALIZED VIOLATIONS	ASSESSED PENALTIES	NO VIOLATIONS	UNPENALIZED VIOLATIONS
34	2168 (508) 9.9%	9811 (1136) 44.6%	2127 (344) 9.7%	314333* (80611) 20.9%	578509 (84797) 38.5%	318598 (51864) 21.2%
35	937* (308) 3.5%	10553 (1119) 39.3%	2739 (649) 10.2%	421148 (72111) 17.7%	965172 (106777) 40.5%	334568 (69072) 14.1%
36	754 (168) 7.1%	3316 (505) 31.4%	1221* (347) 11.5%	459236 (91292) 23.4%	645498 (109905) 32.8%	311618* (96766) 15.9%
37	571* (148) 10.2%	1703 (350) 30.5%	464* (187) 8.3%	889443 (186031) 47.3%	515330 (92031) 27.4%	294986* (107367) 15.7%
38	151* (59) 3.7%	1811 (393) 44.6%	182* (116) 4.5%	135348* (76716) 17.8%	229781 (49619) 30.3%	35049* (49683) 4.6%
39	215* (122) 2.8%	2272* (751) 29.6%	474* (315) 6.2%	28353* (24754) 5.4%	268489* (133598) 51.2%	68774* (66570) 13.1%
41	524* (309) 10.6%	2073* (808) 42.1%	...	49817* (35048) 25.0%	52547* (17883) 26.4%	...
42	2075* (590) 9.6%	8272 (1566) 38.3%	1285* (547) 6.0%	136541 (29392) 16.6%	389794 (63849) 47.5%	75858* (39345) 9.2%
45	564* (337) 14.2%	2083* (663) 52.4%	202* (141) 5.1%	176891* (84642) 39.2%	180207* (81143) 39.9%	57097* (31627) 12.7%
48	467* (309) 3.0%	2915* (926) 18.6%	1331* (829) 8.5%	36235* (23012) 5.4%	211430* (74876) 31.5%	71301* (38665) 10.6%
49	1302* (490) 12.7%	5906* (1644) 57.6%	1175* (466) 11.5%	191477* (53512) 22.8%	482299* (170509) 57.3%	121846* (52169) 14.5%
50	997* (475) 3.1%	10729 (1982) 33.4%	1867* (585) 5.8%	72563* (26433) 7.9%	372885 (83899) 40.8%	95704* (33955) 10.5%
51	...	4094* (1324) 43.8%	1117* (885) 11.9%	...	116512* (53625) 54.9%	15341* (9869) 7.2%
55	278* (278) 1.4%	4581* (1377) 23.4%	691* (348) 3.5%	5847* (5847) 1.4%	89093* (30028) 21.9%	11112* (5258) 2.7%
72	117* (84) .5%	4888* (1381) 22.9%	408* (341) 1.9%	11658* (8398) 2.5%	148286 (35638) 31.4%	17923* (12595) 3.8%
73	404* (186) 2.2%	7133 (1431) 38.8%	556* (262) 3.0%	50655* (13654) 4.6%	438585 (99711) 39.9%	101065* (30089) 9.2%
75	1669* (656) 6.4%	9437 (1766) 36.0%	457* (319) 1.7%	38715* (14850) 9.2%	150343 (27885) 35.7%	7925* (5303) 1.9%
76	327* (463) 3.3%	2911 (708) 29.5%	384* (260) 3.9%	3598* (5091) 1.8%	59941* (15002) 29.6%	19571* (16621) 9.7%
80	294* (98) 4.2%	3490 (441) 49.4%	320* (115) 4.5%	394595* (112756) 10.8%	2044493 (312489) 55.9%	262080 (55657) 7.2%
ALL	25182 (1876) 5.0%	172936 (6681) 34.2%	34967 (2994) 6.9%	5793725 (348916) 17.4%	13202494 (556441) 39.7%	4163873 (318742) 12.5%

\*Standard error &gt;25% of the estimate. The estimate may be unreliable.

...No facilities observed.

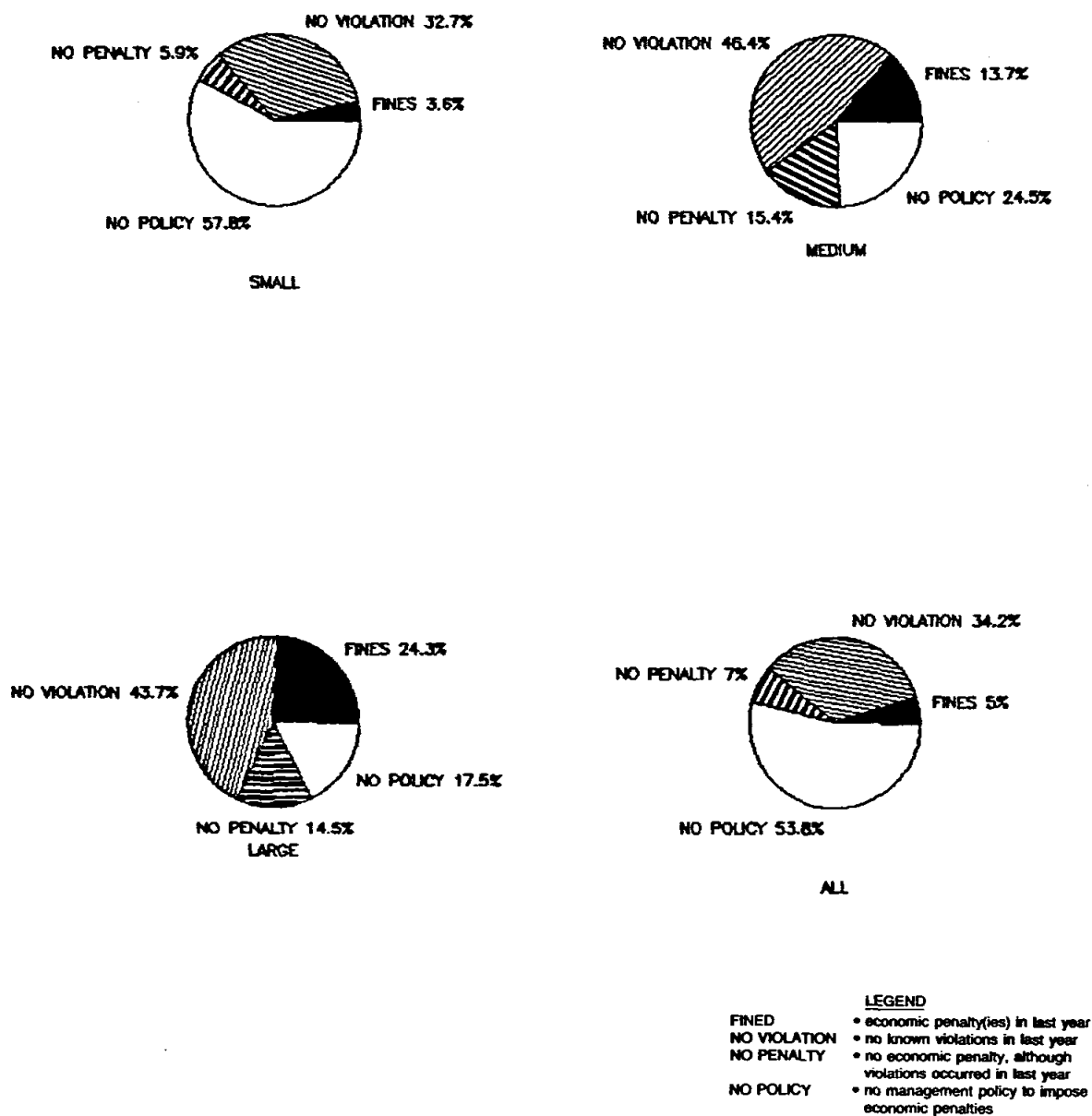
**FIGURE IV - 152**  
**WORKERS IN PLANTS BY PLANT SIZE AND CATEGORY**  
**OF ECONOMIC PENALTY FOR SAFETY RULE VIOLATIONS**  
**(NOES 1981-1983)**



**LEGEND**

FINED • economic penalty(ies) in last year  
 NO VIOLATION • no known violations in last year  
 NO PENALTY • no economic penalty, although violations occurred in last year  
 NO POLICY • no management policy to impose economic penalties

**FIGURE IV - 153**  
**PLANTS BY SIZE AND CATEGORY OF ECONOMIC**  
**PENALTY FOR SAFETY RULE VIOLATIONS**  
**(NOES 1981-1983)**



**NATIONAL OCCUPATIONAL EXPOSURE SURVEY  
(1981-1983)  
Analyses of Management Interview Responses**

**Section V - General Recordkeeping**

- retention of personnel records**
- employee absenteeism records**
- unscheduled absenteeism**

**turnover rates for permanent employees**

**maintenance of Occupational Injuries and  
Illnesses records**

**NOES QUESTIONNAIRE ITEM NO. 62**  
**Retention of Personnel Records on Terminated Employees**

**Intent**

The intent of this question was to determine the length of time that facilities retained personnel records on workers whose employment had been terminated.

This item was displayed on the questionnaire as:

62. How long are personnel records on terminated employees retained?

— — — Years (If "forever" code "999")  
(If "unknown" code "U K \_ \_")

**Notes**

Any recordkeeping system which identified an individual and provided personal data on that individual was considered.

Recordkeeping systems which identified only worker groups or which were regarded only as medical recordkeeping systems were not considered in this response.

As previously discussed in the Notes text on question 33, three classes of responses to this question were possible. "Unknown" (UK) responses were discarded as not containing useful information, "forever" responses are presented in terms of the number of plants (and workers in those plants) which maintained records "forever" and discrete value responses ("non-forever") were averaged across industry and facility strata.

**Analysis**

Two analyses of the responses to question 62 are presented.

- (1) Response 62 - Average "non-forever" years that facilities retain the personnel records on terminated employees

The estimates of the average number of years (to the nearest year) that facilities retain the personnel records of terminated employees are presented in Figures V-1 and V-2, and Tables V-1 and V-2.

Figure V-1            Average number of "non-forever" years plants keep  
                         personnel records on terminated workers  
                         (by major industrial group)

Figure V-2            Average number of "non-forever" years plants keep  
                         personnel records on terminated workers  
                         (by 2-digit SIC)

Table V-1            Average number of years facilities keep personnel  
                         records on terminated employees among plants not  
                         reporting "forever" (by major industrial group)

**Table V-2**                      **Average number of years facilities keep personnel records on terminated employees among plants not reporting "forever" (by 2-digit SIC)**

**(2) Response 62 - Retention of personnel records "forever"**

The estimates of the plants which retain personnel records on terminated employees "forever", and workers in those plants (by number and proportion of the totals) are displayed in Figures V-3 and V-4, and Tables V-3 and V-4.

**Figure V-3**                      **Proportion of plants which keep personnel records on terminated employees "forever"**

**(by major industrial group)**

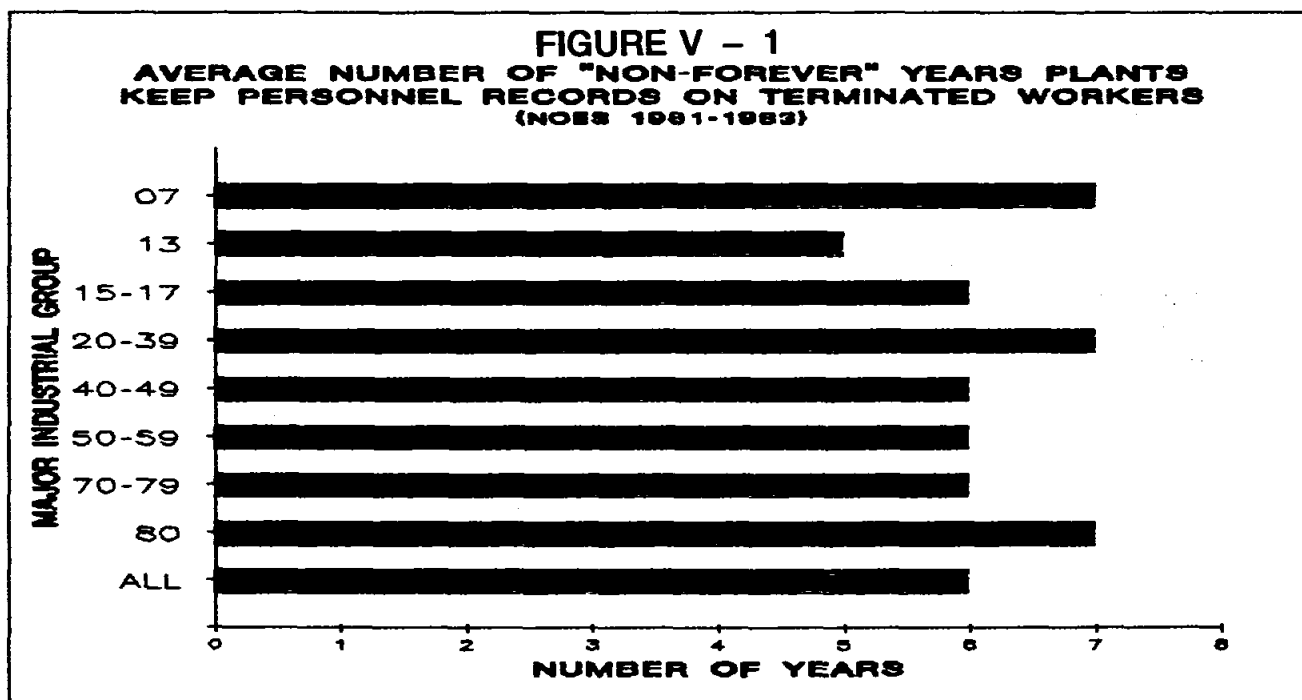
**Figure V-4**                      **Plants which keep personnel records on terminated employees "forever"**

**(by 2-digit SIC)**

**Table V-3**                      **Number and percent of plants and employees in plants which keep personnel records on terminated workers "forever" (by major industrial group)**

**Table V-4**                      **Number and percent of plants and employees in plants which keep personnel records on terminated workers "forever" (by 2-digit SIC)**





NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. V-1

AVERAGE NUMBER OF YEARS FACILITIES KEEP PERSONNEL RECORDS ON TERMINATED  
 EMPLOYEES AMONG PLANTS NOT REPORTING "FOREVER"

MAJOR GROUP	PLANT SIZE			ALL
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	
07	7 (1)	5* (3)	...	7 (1)
13	5* (2)	7* (3)	...	5* (2)
15-17	6 ( $<.5$ )	8 (1)	5* (2)	6 ( $<.5$ )
20-39	6 ( $<.5$ )	8 ( $<.5$ )	9 (2)	7 ( $<.5$ )
40-49	6 (1)	8 (2)	7* (2)	6 (1)
50-59	6 (1)	8 (1)	...	6 (1)
70-79	6 ( $<.5$ )	7 (1)	11 (3)	6 ( $<.5$ )
80	6* (4)	7 (1)	6 (1)	7 (1)
ALL	6 ( $<.5$ )	7 ( $<.5$ )	8 (1)	6 ( $<.5$ )

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

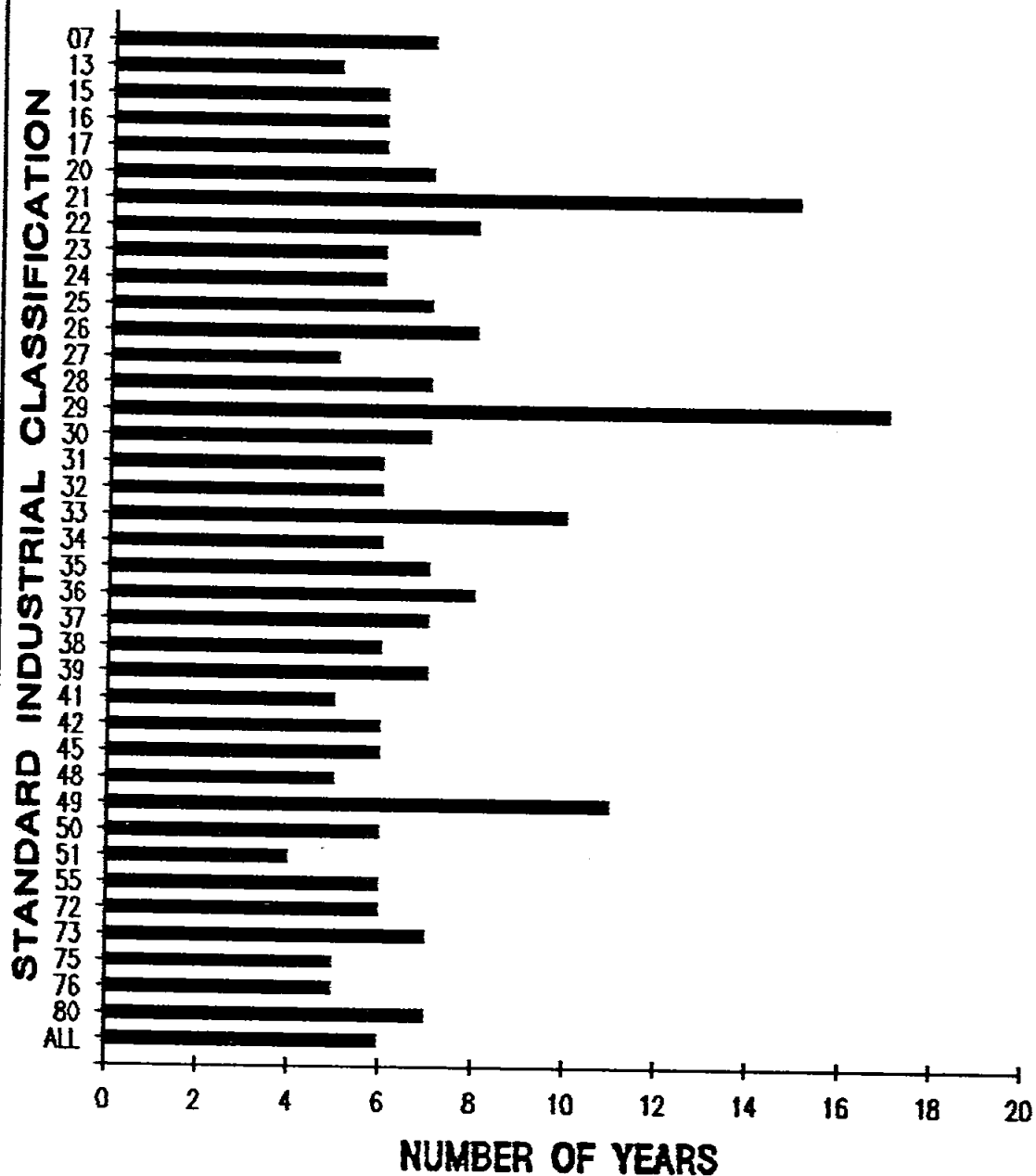
AVERAGE NUMBER OF YEARS FACILITIES KEEP PERSONNEL RECORDS ON TERMINATED  
EMPLOYEES AMONG PLANTS NOT REPORTING "FOREVER"

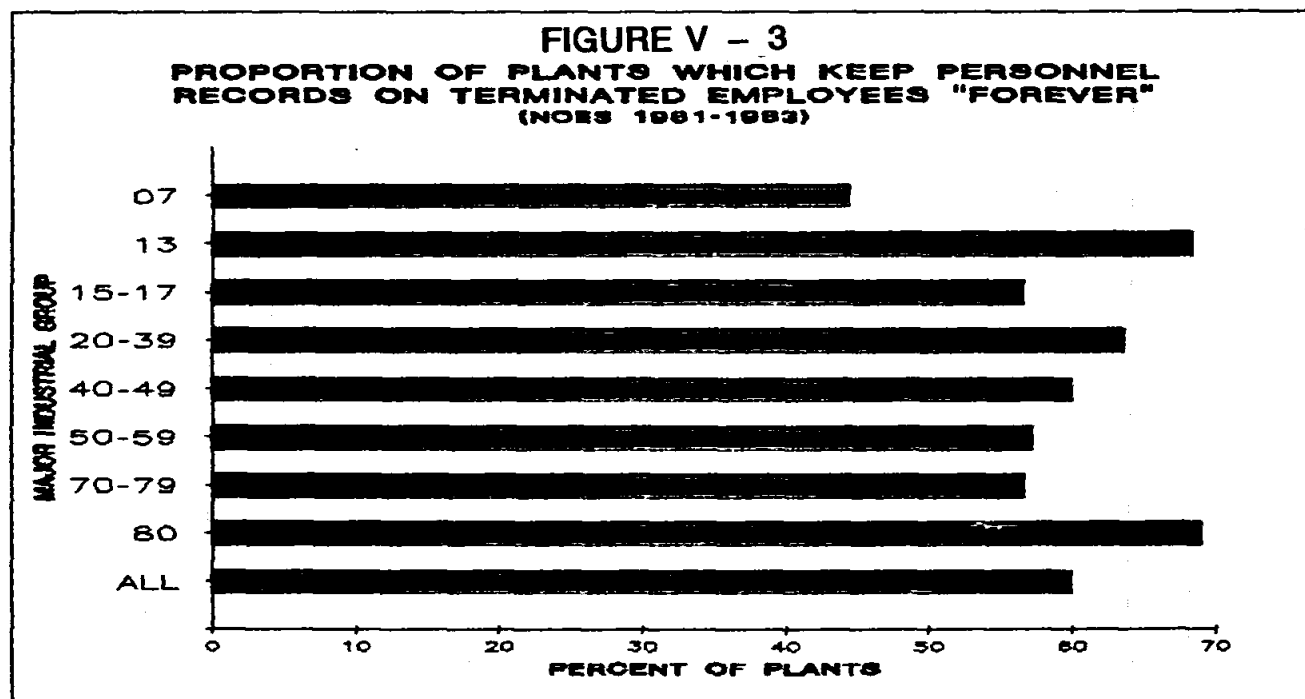
SIC CODE	PLANT SIZE			ALL
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	
07	7 (1)	5* (3)	...	7 (1)
13	5* (2)	7* (3)	...	5* (2)
15	5 ( $<.5$ )	7 (1)	5* (2)	6 ( $<.5$ )
16	5 (1)	7 (1)	4* (3)	6 (1)
17	6 ( $<.5$ )	8 (1)	...	6 ( $<.5$ )
20	7 (1)	8 (2)	6* (2)	7 (1)
21	30* (21)	...	13* (6)	15* (6)
22	8 (2)	8 (1)	8* (4)	8 (1)
23	5 ( $<.5$ )	8 (2)	...	6 ( $<.5$ )
24	6* (2)	7 (2)	5* (4)	6 (1)
25	6 (1)	10* (3)	2* (1)	7 (1)
26	7 (1)	7* (2)	18* (5)	8 (1)
27	5 ( $<.5$ )	6 (1)	9 (2)	5 ( $<.5$ )
28	5* (1)	11* (3)	15* (12)	7 (2)
29	20* (14)	...	10* (7)	17* (10)
30	7* (2)	7 (1)	4* (1)	7 (2)
31	6* (2)	6 (1)	...	6 (1)
32	6 (1)	11* (5)	14* (9)	6 (1)
33	10* (3)	7* (3)	14* (5)	10 (2)

SIC CODE	PLANT SIZE			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	ALL
34	6 (1)	5 (1)	4* (1)	6 ( $<.5$ )
35	7 (1)	6 (1)	8 (1)	7 (1)
36	7 (2)	8 (2)	6 (1)	8 (1)
37	6* (3)	6 ( $<.5$ )	16* (5)	7* (2)
38	6 (1)	7 (1)	7* (8)	6 (1)
39	7 (1)	10 (2)	7* (4)	7 (1)
41	4* (3)	9* (3)	...	5* (2)
42	6 (1)	9 (2)	7* (7)	6 (1)
45	6* (4)	2* (1)	4* (3)	6* (2)
48	5 (1)	10* (8)	5* (4)	5 (1)
49	12* (5)	6* (3)	7* (2)	11* (4)
50	6 (1)	8 (1)	...	6 (1)
51	4* (1)	...	...	4* (1)
55	6 (1)	7* (4)	...	6 (1)
72	6 (1)	8 (2)	7* (5)	6 (1)
73	7 (1)	6 (1)	11 (3)	7 (1)
75	5 (1)	...	...	5 (1)
76	5 (1)	7* (5)	...	5 (1)
80	6* (4)	7 (1)	6 (1)	7 (1)
ALL	6 ( $<.5$ )	7 ( $<.5$ )	8 (1)	6 ( $<.5$ )

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE V - 2**  
**AVERAGE NUMBER OF "NON-FOREVER" YEARS PLANTS**  
**KEEP PERSONNEL RECORDS ON TERMINATED WORKERS**  
**(NOES 1981-1983)**





NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. V-3

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 KEEP PERSONNEL RECORDS ON TERMINATED WORKERS "FOREVER"

MAJOR GROUP	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	2515* (1243) 45.2%	...	...	2515* (1243) 44.6%	41315* (23077) 39.8%	...	...	41315* (23077) 37.3%
13	5877 (1290) 68.4%	696* (230) 68.3%	46* (52) 100.0%	6619 (1378) 68.5%	141531 (26394) 67.7%	108447* (34128) 62.3%	31383* (35291) 100.0%	281361 (64885) 67.9%
15-17	53788 (3672) 57.0%	1960 (417) 47.3%	202* (128) 83.3%	55950 (3553) 56.7%	1157675 (71740) 55.2%	339424 (71217) 46.0%	166555* (95272) 70.6%	1663655 (106967) 54.2%
20-39	97258 (2966) 63.5%	20624 (1694) 65.0%	3904 (239) 62.3%	121786 (3256) 63.7%	2974075 (79727) 64.4%	4169231 (327004) 65.3%	5266724 (439447) 63.7%	12410030 (629234) 64.4%
40-49	31315 (2764) 58.9%	4217 (955) 72.2%	192* (103) 41.1%	35724 (3197) 60.1%	905346 (84113) 63.1%	753315 (187387) 65.3%	245514* (86614) 42.8%	1904175 (208264) 60.2%
50-59	33320 (2690) 57.1%	1727* (542) 65.0%	...	35047 (2774) 57.4%	656853 (51749) 58.4%	260672* (82246) 63.8%	...	917525 (107344) 59.8%
70-79	41405 (3163) 56.6%	1413 (199) 60.2%	147* (64) 41.6%	42965 (3150) 56.7%	737617 (66128) 52.9%	284335 (38453) 61.2%	181944* (79531) 53.6%	1203896 (94453) 54.8%
80	2204* (731) 77.6%	1543 (249) 71.2%	1134 (232) 55.0%	4880 (714) 69.1%	70038 (17334) 68.9%	389829 (66094) 72.9%	1609788 (32252) 53.3%	2069655 (301305) 56.6%
ALL	267681 (7135) 59.6%	32181 (2099) 64.4%	5625 (380) 59.6%	305487 (7418) 60.1%	6684450 (164799) 60.3%	6305253 (401115) 63.9%	7501908 (566665) 60.2%	20491611 (752809) 61.3%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

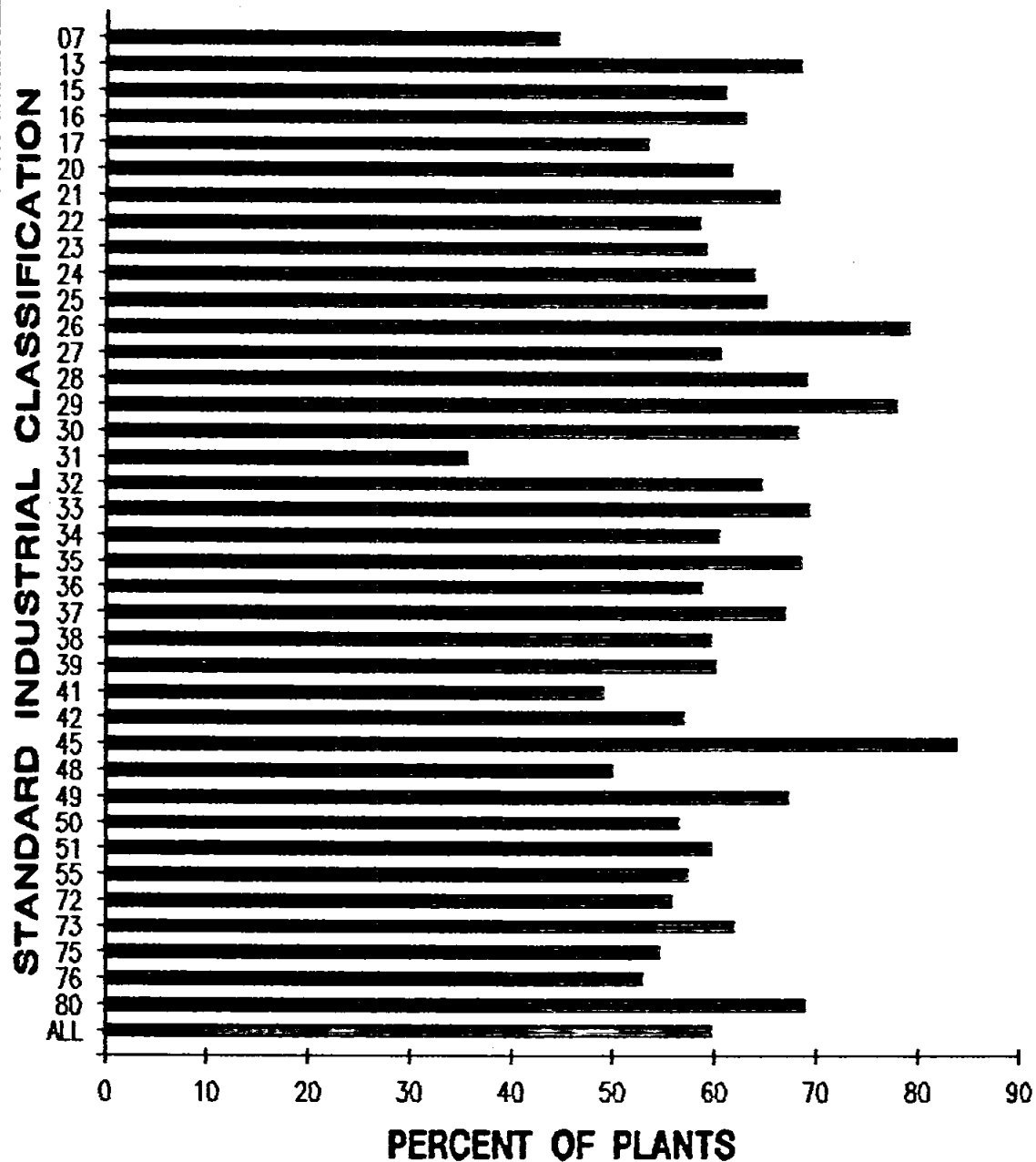
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
KEEP PERSONNEL RECORDS ON TERMINATED WORKERS "FOREVER"

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	2515* (1243) 45.2%	...	...	2515* (1243) 44.6%	41315* (23077) 39.8%	...	...	41315* (23077) 37.3%
13	5877 (1290) 68.4%	696* (230) 68.3%	46* (52) 100.0%	6619 (1378) 68.5%	141531 (26394) 67.7%	108447* (34128) 62.3%	31383* (35291) 100.0%	281361 (64885) 67.9%
15	15253 (1356) 61.2%	605* (268) 54.6%	103* (98) 76.2%	15960 (1407) 61.0%	331528 (42472) 58.9%	117009* (44549) 59.0%	82978* (72789) 61.6%	531514 (92158) 59.3%
16	7200 (1443) 63.8%	582* (160) 52.0%	99* (66) 92.4%	7880 (1466) 63.0%	168428 (41767) 59.3%	85647* (23809) 41.2%	83578* (52538) 82.5%	337653 (74099) 56.9%
17	31336 (2468) 53.9%	773* (332) 40.3%	...	32109 (2447) 53.5%	657719 (47885) 52.5%	136768* (57188) 41.3%	...	794488 (60407) 50.2%
20	6849 (783) 60.0%	2095 (353) 65.1%	426 (95) 76.1%	9369 (873) 61.7%	248902 (27698) 64.1%	500828 (87603) 74.3%	350753 (73790) 71.3%	1100483 (99350) 70.8%
21	26* (42) 86.5%	...	46* (37) 58.6%	72* (51) 66.3%	1608* (2605) 86.2%	...	82069* (68223) 73.2%	83677* (61786) 73.4%
22	1631* (428) 55.6%	1045 (136) 65.8%	141* (59) 47.2%	2818 (416) 58.5%	66097 (11044) 62.3%	227882 (30095) 65.7%	143384* (72625) 54.9%	437364 (65247) 61.2%
23	6989 (664) 55.9%	2161 (204) 69.7%	242* (93) 100.0%	9392 (749) 59.2%	253172 (30444) 59.7%	423055 (35340) 69.4%	208437* (79559) 100.0%	884664 (97673) 71.2%
24	6898 (943) 64.4%	645* (187) 56.2%	97* (73) 93.5%	7641 (1026) 63.9%	186645 (26232) 61.5%	105080 (26113) 57.2%	84209* (52011) 91.2%	375934 (81650) 64.9%
25	2718 (408) 65.3%	659* (183) 62.1%	101* (74) 84.9%	3479 (479) 65.1%	96112 (18559) 69.1%	155397* (43910) 60.6%	107692* (61537) 87.6%	359201 (77246) 69.3%
26	3533 (731) 85.9%	1038* (266) 66.2%	95* (57) 44.4%	4667 (771) 79.1%	106622 (15806) 77.5%	180094 (43205) 64.0%	55206* (32762) 26.7%	341922 (60050) 54.6%
27	11054 (1191) 61.0%	1068 (148) 57.0%	182* (86) 57.6%	12305 (1212) 60.6%	299326 (29882) 62.6%	201496 (37306) 55.8%	199292* (68616) 57.6%	700113 (84118) 59.1%
28	4542 (546) 73.6%	596 (109) 51.4%	188* (59) 49.5%	5326 (560) 69.1%	138902 (10248) 76.9%	134442 (24345) 51.5%	254989* (96570) 53.5%	528333 (90930) 57.6%
29	748* (431) 73.9%	267* (122) 91.1%	80* (38) 79.1%	1094* (481) 77.9%	30921* (16845) 75.5%	58505* (19595) 92.5%	102156* (69145) 86.9%	191582* (79921) 86.4%
30	4674 (1021) 69.6%	1053* (381) 68.5%	53* (46) 23.8%	5780 (1187) 68.2%	147874 (28051) 65.7%	178946* (71537) 60.8%	63559* (37574) 27.2%	390379 (94349) 51.8%
31	197* (181) 21.2%	324* (89) 57.0%	25* (24) 100.0%	547* (201) 35.8%	6397* (5084) 25.7%	81689* (27026) 60.3%	15664* (16901) 100.0%	103750* (32303) 58.9%
32	5592 (955) 63.6%	735 (160) 72.6%	144* (63) 78.5%	6471 (1013) 64.7%	159067 (14227) 67.1%	153873 (26846) 73.6%	97961* (42368) 75.9%	410902 (38878) 71.4%
33	2595 (400) 62.8%	1255 (157) 85.5%	273 (65) 81.0%	4122 (423) 69.4%	92674 (12815) 66.9%	264184 (32809) 84.9%	475878 (92436) 76.6%	832735 (95514) 77.7%

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	11037 (1214) 59.6%	2016 (226) 64.6%	240* (78) 69.4%	13292 (1260) 60.5%	328008 (24001) 59.1%	407717 (41049) 68.3%	252001* (81487) 71.8%	987726 (93294) 65.7%
35	15661 (1381) 69.1%	2233 (175) 65.6%	505 (107) 64.4%	18399 (1406) 68.6%	436503 (25020) 71.9%	440223 (39357) 66.6%	710781 (116310) 63.9%	1587507 (111237) 66.7%
36	4142 (479) 58.3%	1526 (184) 56.8%	546* (141) 69.4%	6215 (577) 58.8%	133476 (19122) 57.9%	299594 (42738) 54.2%	706025 (141166) 59.7%	1139095 (154202) 58.0%
37	2516* (681) 63.3%	912 (161) 76.6%	312* (92) 75.0%	3740 (689) 67.0%	67627 (13014) 53.2%	173152 (41016) 72.4%	1145021 (276018) 75.6%	1385801 (262785) 73.7%
38	1721 (372) 64.0%	517 (116) 54.0%	186* (101) 44.7%	2423 (429) 59.7%	68793 (9054) 65.8%	94200* (28363) 48.5%	186181* (96491) 40.4%	349173* (110724) 46.0%
39	4135 (829) 63.1%	480* (989) 60.1%	20* (17) 6.0%	4634* (1324) 60.3%	105349 (17807) 63.5%	88875* (189889) 59.5%	25466* (19911) 12.2%	219689* (189363) 41.9%
41	2175* (577) 49.2%	252* (136) 49.4%	---	2426* (620) 49.2%	63740* (16347) 54.2%	34499* (18593) 42.3%	---	98238* (25652) 49.3%
42	11243 (1704) 56.1%	1020* (279) 68.8%	72* (60) 87.9%	12335 (1749) 57.1%	272876 (39254) 55.9%	165817* (48737) 64.1%	66490* (53381) 88.9%	505183 (58967) 61.5%
45	2768* (810) 85.4%	534* (387) 90.6%	40* (20) 27.0%	3342* (962) 84.0%	62345* (17410) 80.4%	101262* (74123) 92.6%	83882* (48380) 31.7%	247488* (78760) 54.9%
48	7101 (1339) 48.3%	708 (167) 78.5%	30* (20) 88.9%	7839 (1441) 50.1%	249716* (66442) 58.7%	126930* (34076) 72.0%	56857* (37465) 81.1%	433503 (94261) 64.5%
49	5526 (1376) 67.3%	1334* (432) 71.6%	50* (75) 29.1%	6910 (1455) 67.4%	204257* (51537) 75.8%	248901* (79641) 58.5%	38285* (48601) 26.1%	491443 (103522) 58.4%
50	16723 (1780) 55.1%	1490* (482) 82.7%	---	18213 (1988) 56.6%	361846 (45808) 57.4%	233660* (80094) 82.5%	---	595506 (106751) 65.2%
51	5365 (1046) 58.9%	237* (237) 100.0%	---	5602 (1066) 59.9%	100812 (20648) 54.5%	27013* (27013) 100.0%	---	127824* (38945) 60.3%
55	11232 (2145) 59.3%	---	---	11232 (2145) 57.5%	194195 (40119) 62.8%	---	---	194195 (40119) 47.6%
72	11498 (1838) 55.7%	427* (148) 63.2%	---	11925 (1842) 55.9%	200179 (40080) 52.7%	51484* (19318) 62.6%	---	251663 (44465) 53.2%
73	10389 (1837) 62.7%	892 (143) 59.9%	147* (64) 43.2%	11428 (1838) 62.1%	223581 (38945) 53.1%	211940 (33374) 60.6%	181944* (79531) 55.3%	617465 (89622) 56.1%
75	14316 (2801) 54.7%	59* (60) 99.7%	---	14375 (2808) 54.8%	228473 (45277) 55.3%	8238* (8380) 100.0%	---	236711 (46109) 56.2%
76	5202* (1361) 53.3%	36* (45) 29.4%	---	5238* (1382) 53.1%	85384 (18462) 47.9%	12672* (15755) 52.1%	---	98056* (29026) 48.4%
80	2204* (731) 77.6%	1543 (249) 71.2%	1134 (232) 55.0%	4880 (714) 69.1%	70038 (17334) 68.9%	389829 (66094) 72.9%	1609788 (322252) 53.3%	2069655 (301305) 56.6%
ALL	265178 (5495) 59.4%	31837 (1295) 64.3%	5625 (477) 59.7%	302640 (5977) 59.8%	6632037 (131316) 60.2%	6238436 (239407) 63.8%	7501908 (628567) 60.2%	20372381 (685274) 61.3%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE V - 4**  
**PLANTS WHICH KEEP PERSONNEL RECORDS**  
**ON TERMINATED EMPLOYEES "FOREVER"**  
 (NOES 1981-1983)





**NOES QUESTIONNAIRE ITEM NO. 63**  
**Recordkeeping on Employee Absenteeism**

**Intent**

The intent of this question was to determine if facility management kept records on employee absenteeism.

This item was displayed on the questionnaire as:

63. Do you keep employee absenteeism records?

- 1 Yes, showing specific nature of illness where appropriate
- 2 Yes, showing only the type of absence
- 3 Yes, without showing the type of absence
- 4 No

**Notes**

Employee absenteeism record refers to that information kept by management concerning the failure of employees to report for work as scheduled.

Recordkeeping by management intended only to satisfy federal, state, or local regulations were not considered an affirmative response.

Simply recording the presence or absence of an employee (exemplified by industries which pay only for days worked) was coded "3". Additional recordkeeping which specified at least absence type (such as illness or personal leave) was coded "2", and recordkeeping which provided specifics on type of illness where appropriate was coded "1".

**Analysis**

Two analyses of the responses to question 63 are presented.

- (1) Responses 63.1, 63.2, and 63.3 - Maintenance of any record keeping system for employee absenteeism.

The estimates of the plants which keep any type of absenteeism records, and workers in those plants (by number and proportion of the total) are displayed in Figures V-5 and V-6, and Tables V-5 and V-6.

Figure V-5            Plants which keep absenteeism records  
                              (by major industrial group)

Figure V-6            Plants which keep absenteeism records  
                              (by 2-digit SIC)

Table V-5            Number and percent of plants and employees in plants  
                              which keep any type of absenteeism records (by major  
                              industrial group)

Table V-6            Number and percent of plants and employees in plants  
                              which keep any type of absenteeism records (by 2-digit  
                              SIC)

- 2) Responses 63.1, 63.2, 63.3, or 63.4 - Maintenance of recordkeeping systems for employee absenteeism by type of record

Estimates of the proportion of plants, and workers in those plants, which keep specific types of absenteeism records are displayed in Figures V-7 and V-8.

Figure V-7            Workers in plants which keep absenteeism records by plant size and records type

Figure V-8            Plants which maintain absenteeism records by plant size and record type

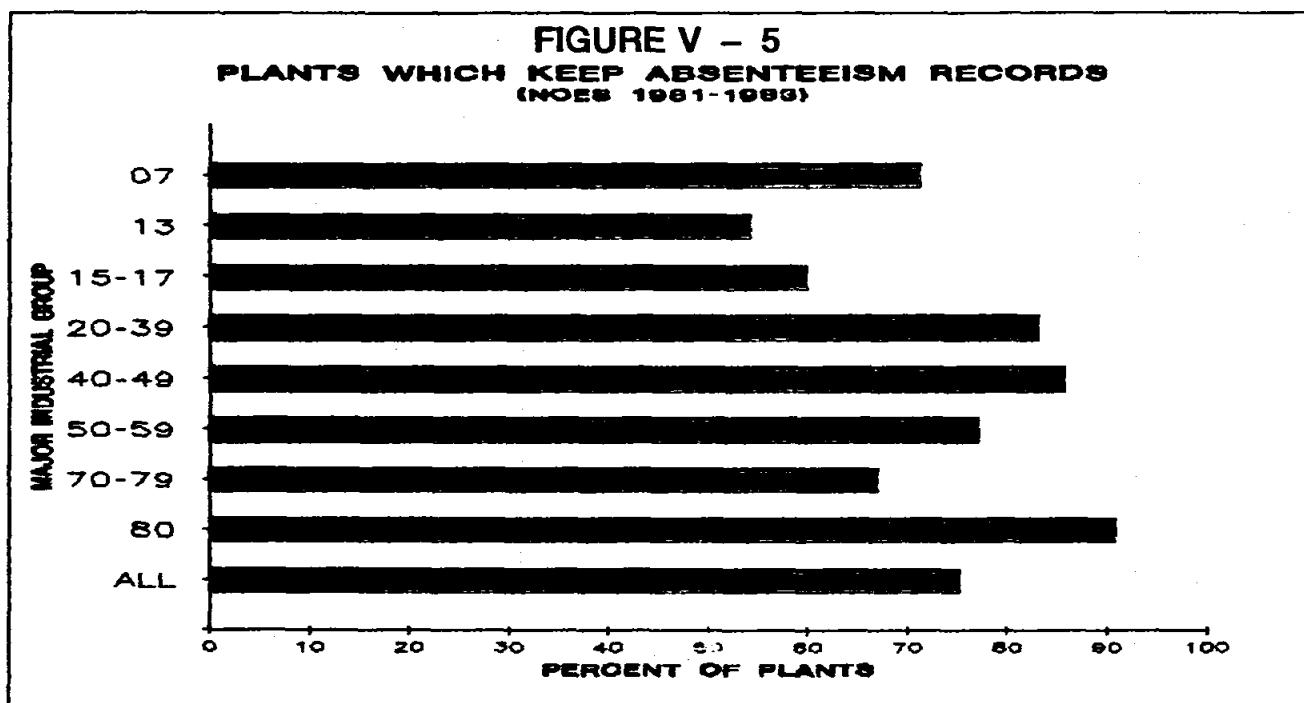
Note: As displayed in Figure V-7 and V-8;

"illness" is equivalent to response 63.1 (showing specific nature of illness).

"kind" is equivalent to response 63.2 (showing only type of absence).

"general" is equivalent to response 63.3 (without showing the type of absence).

"none" is equivalent to response 63.4 (no).



NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. V-5

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH KEEP ANY TYPE OF ABSENTEEISM RECORDS

MAJOR GROUP	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	3955* (1254) 71.1%	70* (67) 100.0%	...	4025* (1239) 71.5%	81430* (26343) 78.5%	7009* (6680) 100.0%	...	88439* (25205) 79.9%
13	4334 (985) 50.4%	878* (314) 86.1%	46* (52) 100.0%	5258 (1083) 54.4%	108390 (17365) 51.9%	149377* (51226) 85.9%	31383* (35291) 100.0%	289150* (80331) 69.8%
15-17	56414 (2751) 59.8%	2685 (411) 64.8%	226* (134) 93.3%	59325 (2629) 60.1%	1337501 (59417) 63.7%	501003 (85687) 68.0%	223177* (99426) 94.5%	2061681 (113288) 67.1%
20-39	122473 (3237) 79.9%	30727 (2019) 96.8%	6216 (154) 99.1%	159416 (3748) 83.3%	3887097 (60502) 84.2%	6220548 (379246) 97.5%	8217988 (237695) 99.4%	18325633 (524136) 95.1%
40-49	45104 (3291) 84.9%	5550 (1014) 95.0%	415* (136) 88.8%	51070 (3693) 85.9%	1253090 (112940) 87.4%	1115310 (220025) 96.7%	535872 (108960) 93.4%	2904272 (284080) 91.9%
50-59	44614 (2812) 76.4%	2564* (719) 96.4%	...	47178 (3034) 77.3%	902762 (64613) 80.3%	396758* (110002) 97.0%	...	1299520 (142808) 84.8%
70-79	48476 (3043) 66.3%	2278 (350) 97.1%	319* (150) 90.0%	51073 (3048) 67.3%	1004327 (73990) 72.1%	447650 (65686) 96.4%	311007* (124121) 91.6%	1762985 (140642) 80.2%
80	2368* (723) 83.4%	2038 (248) 94.1%	2031 (297) 98.6%	6438 (731) 91.1%	88104 (20474) 86.7%	516278 (75688) 96.6%	2952131 (345917) 97.7%	3556513 (334457) 97.2%
ALL	327738 (7008) 73.0%	46791 (2465) 93.6%	9253 (417) 98.0%	383782 (7505) 75.4%	8662702 (176098) 78.2%	9353934 (473702) 94.9%	12271558 (463213) 98.4%	30288193 (726208) 90.7%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
...No facilities observed.

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
KEEP ANY TYPE OF ABSENTEEISM RECORDS

SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	3955* (1254) 71.1%	70* (67) 100.0%	...	4025* (1239) 71.5%	81430* (26343) 78.5%	7009* (6680) 100.0%	...	88439* (25205) 79.9%
13	4334 (985) 50.4%	878* (314) 86.1%	46* (52) 100.0%	5258 (1083) 54.4%	108390 (17365) 51.9%	149377* (51226) 85.9%	31383* (35291) 100.0%	289150* (80331) 69.8%
15	12788 (1202) 51.3%	917 (197) 82.8%	119* (100) 87.9%	13824 (1244) 52.8%	303636 (29854) 53.9%	157977 (35380) 79.1%	121919* (71252) 90.4%	583532 (79388) 65.1%
16	7106 (1400) 63.0%	810* (230) 72.4%	107* (67) 100.0%	8023 (1383) 64.1%	175994 (42024) 62.0%	157276* (46177) 75.7%	101258* (53561) 100.0%	434528 (75586) 73.3%
17	36520 (2312) 62.8%	958* (310) 49.9%	...	37478 (2287) 62.4%	857872 (44441) 68.5%	185750* (63817) 56.1%	...	1043621 (64651) 65.9%
20	8413 (706) 73.7%	3137 (430) 97.5%	559 (121) 100.0%	12109 (782) 79.7%	303971 (20131) 78.3%	660959 (102923) 98.1%	491775 (104930) 100.0%	1456704 (111153) 93.7%
21	30* (43) 100.0%	...	79* (56) 99.6%	109* (65) 100.0%	1866* (2685) 100.0%	...	112133* (67572) 100.0%	113999* (66861) 100.0%
22	1869 (399) 63.7%	1501 (180) 94.6%	299* (80) 99.9%	3669 (475) 76.1%	71082 (15457) 67.0%	335910 (31168) 96.8%	261093* (94186) 100.0%	668086 (93611) 93.5%
23	8211 (676) 65.6%	2846 (140) 91.7%	242* (93) 100.0%	11299 (638) 71.3%	298763 (16040) 70.5%	569162 (34542) 93.3%	208437* (79559) 100.0%	1076362 (78832) 86.6%
24	7760 (789) 72.4%	1148 (128) 100.0%	104* (74) 100.0%	9012 (821) 75.3%	242221 (23515) 79.8%	183585 (22297) 100.0%	92355* (52501) 100.0%	518161 (73582) 89.4%
25	3415 (500) 82.0%	1062 (133) 100.0%	119* (75) 99.6%	4595 (533) 86.0%	120452 (19104) 86.6%	256443 (35488) 100.0%	122998* (62394) 100.0%	499893 (75971) 96.4%
26	4081 (779) 99.2%	1532 (215) 97.7%	214* (73) 100.0%	5827 (774) 98.8%	135655 (18395) 98.5%	277831 (47082) 98.7%	206864* (65220) 100.0%	620350 (87283) 99.1%
27	13514 (1276) 74.6%	1730 (205) 92.4%	316* (115) 100.0%	15560 (1256) 76.6%	385465 (22362) 80.6%	331072 (53635) 91.7%	345750 (80151) 100.0%	1062287 (114081) 89.7%
28	5467 (452) 88.6%	1160 (93) 100.0%	380 (63) 100.0%	7008 (444) 90.9%	167797 (8145) 92.8%	260831 (27986) 100.0%	476341 (101388) 100.0%	904969 (104933) 98.6%
29	849* (458) 84.0%	293* (125) 100.0%	101* (42) 100.0%	1243* (512) 88.5%	31201* (14872) 76.1%	63255* (21394) 100.0%	117545* (70259) 100.0%	212002* (80585) 95.6%
30	6321 (1171) 94.2%	1537 (382) 100.0%	224* (73) 99.9%	8082 (1326) 95.4%	214125 (28536) 95.2%	294530* (81731) 100.0%	233647* (72848) 100.0%	742301 (109603) 98.6%
31	768* (390) 82.5%	510* (137) 89.6%	25* (24) 100.0%	1303* (410) 85.4%	19341* (8603) 77.7%	125238* (36115) 92.5%	15664* (16901) 100.0%	160243 (39509) 91.0%
32	6001 (800) 68.2%	1012 (142) 100.0%	184* (71) 99.9%	7197 (822) 72.0%	179385 (17574) 75.6%	208984 (30484) 100.0%	128993* (49687) 100.0%	517362 (46455) 90.0%
33	3773 (506) 91.3%	1468 (138) 100.0%	337 (62) 100.0%	5578 (529) 93.9%	130287 (12262) 94.1%	311081 (30513) 100.0%	621499 (82456) 100.0%	1062866 (83638) 99.2%

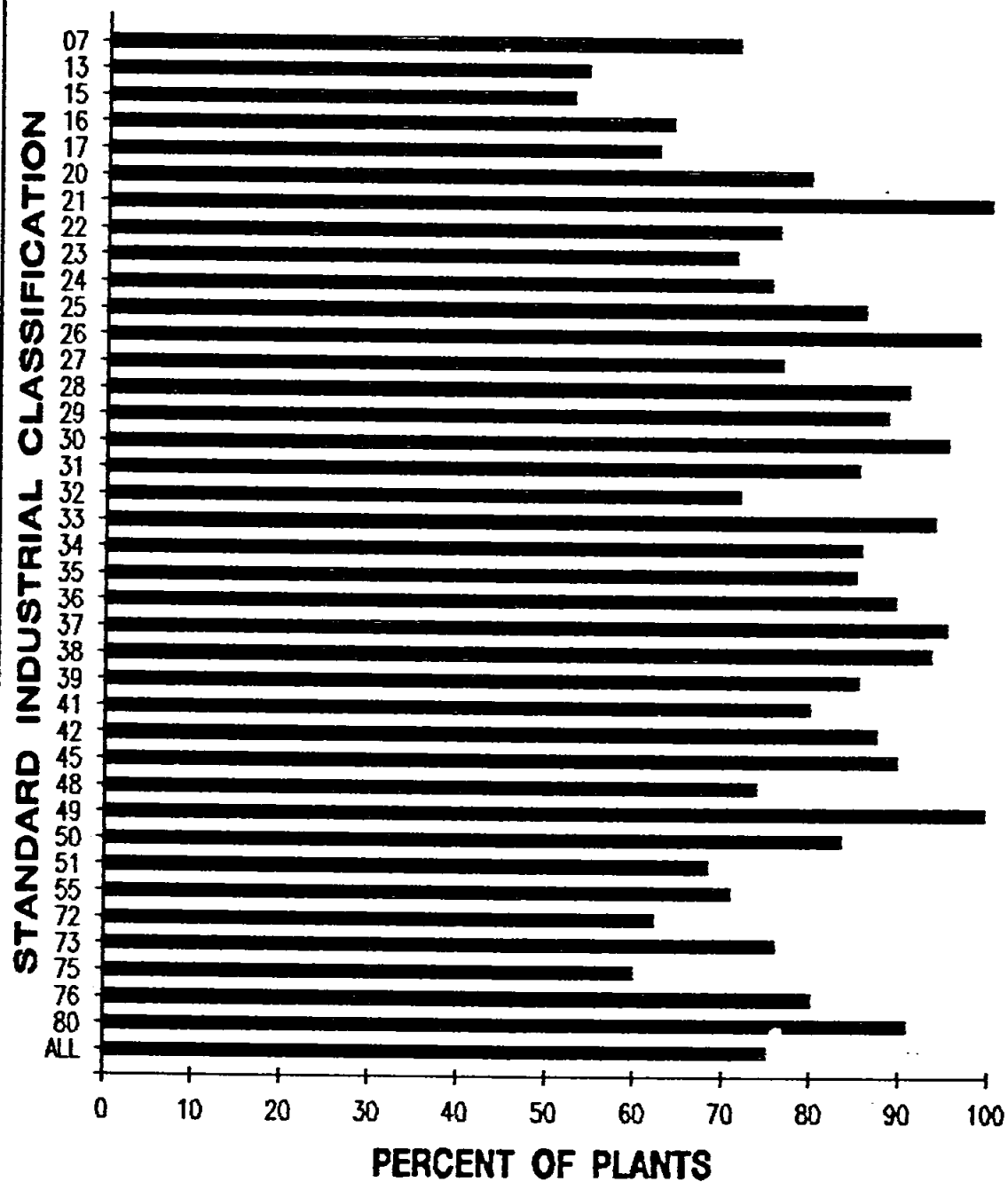
## NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983)

## TABLE NO. V-6 (CONTINUED)

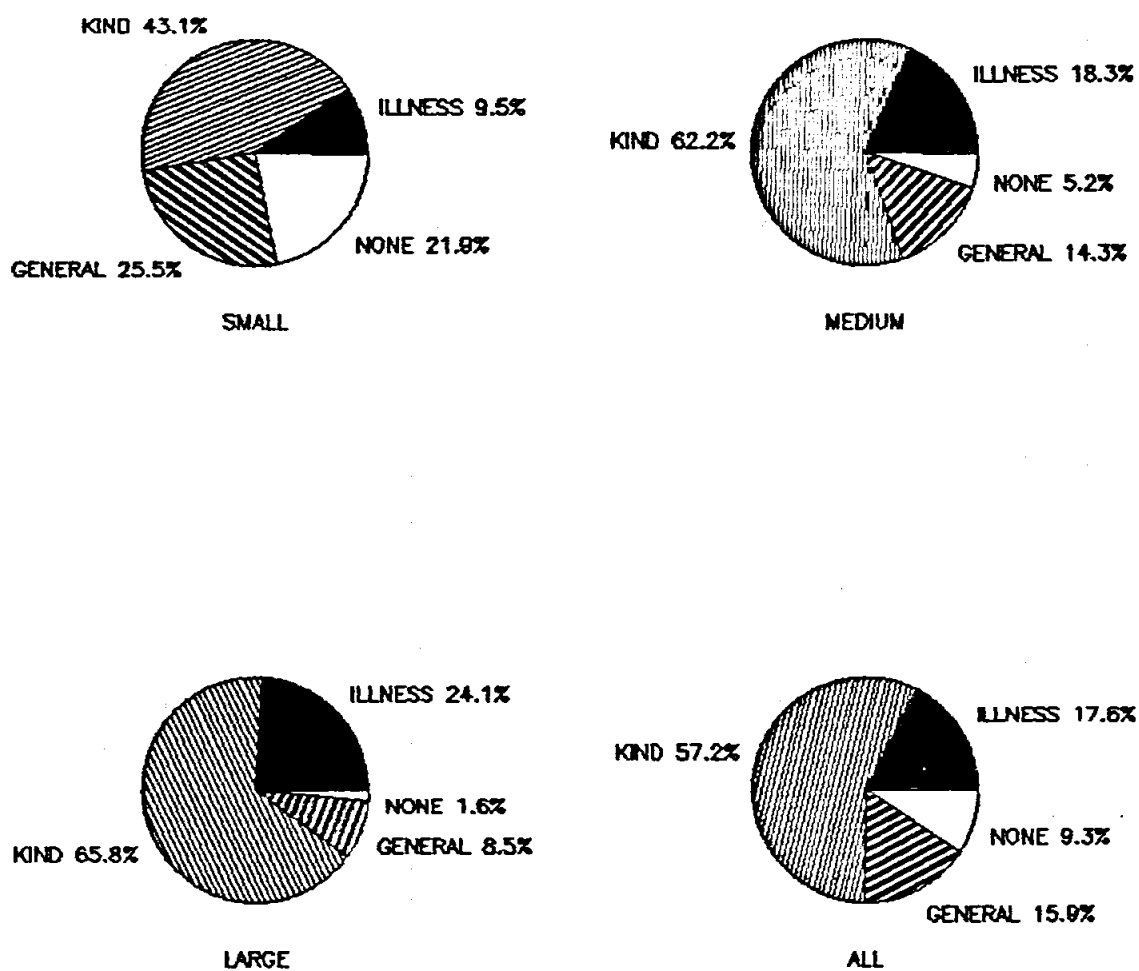
SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	15646 (1212) 84.5%	2856 (199) 91.5%	346 (83) 99.9%	18848 (1181) 85.7%	490917 (15064) 88.5%	563190 (32520) 94.4%	351056* (100266) 100.0%	1405163 (106073) 93.5%
35	18711 (1529) 82.6%	3325 (135) 97.7%	768 (85) 98.0%	22804 (1538) 85.0%	515781 (20702) 85.0%	645491 (80011) 97.6%	1104783 (152705) 99.3%	2266056 (154754) 95.2%
36	6045 (611) 85.1%	2665 (88) 99.2%	765 (169) 97.2%	9474 (599) 89.6%	207640 (16097) 90.1%	549960 (2531) 99.5%	1169919 (195489) 98.9%	1927519 (192458) 98.1%
37	3718 (883) 93.6%	1190 (102) 100.0%	416 (92) 99.9%	5323 (857) 95.4%	117740 (18377) 92.7%	239184 (28491) 100.0%	1514008 (247233) 100.0%	1870933 (241924) 99.5%
38	2447 (411) 91.0%	957 (86) 100.0%	400* (134) 96.1%	3804 (478) 93.6%	101520 (13359) 97.1%	194393 (19871) 100.0%	433758* (118281) 94.2%	729671 (125714) 96.1%
39	5435 (520) 82.9%	798* (1475) 100.0%	338* (216) 100.0%	6571 (1500) 85.5%	151887 (13223) 91.6%	149449* (273871) 100.0%	209369* (120490) 100.0%	510706* (258696) 97.3%
41	3431 (766) 77.6%	510* (178) 100.0%	...	3941 (806) 79.9%	86869 (18850) 73.8%	81542* (35755) 100.0%	...	168411 (40382) 84.6%
42	17459 (1966) 87.2%	1364 (319) 92.1%	82* (54) 99.5%	18905 (2076) 87.6%	441092 (50989) 90.4%	246831 (56609) 95.4%	74830* (49333) 100.0%	762753 (71771) 92.9%
45	2838* (858) 87.6%	590* (397) 99.9%	147* (57) 100.0%	3575 (887) 89.9%	74273* (20648) 95.8%	109332* (75829) 100.0%	264255* (77656) 100.0%	447860 (100535) 99.3%
48	10613 (1867) 72.2%	902 (183) 100.0%	34* (21) 99.0%	11548 (1916) 73.9%	325676 (78970) 76.5%	176322 (39398) 100.0%	70083* (43687) 100.0%	572081 (104032) 85.1%
49	8215 (1754) 100.0%	1862* (567) 100.0%	153* (100) 88.3%	10230 (1962) 99.8%	269370 (58035) 100.0%	425470* (151076) 100.0%	126704* (65426) 86.4%	821543 (186040) 97.6%
50	25073 (2045) 82.6%	1799* (476) 99.8%	...	26872 (2081) 83.6%	531227 (57351) 84.3%	282584* (78924) 99.8%	...	813811 (111412) 89.1%
51	6175 (1105) 67.8%	237* (237) 100.0%	...	6412 (1221) 68.6%	135797 (28997) 73.4%	27013* (27013) 100.0%	...	162809* (48447) 76.8%
55	13366 (2261) 70.6%	528* (475) 85.2%	...	13894 (2534) 71.1%	235737 (46459) 76.3%	87162* (78399) 88.4%	...	322899* (104117) 79.2%
72	12622 (1857) 61.2%	675* (190) 100.0%	13* (19) 100.0%	13311 (1917) 62.4%	262280 (41296) 69.0%	82220* (24190) 100.0%	10670* (15114) 100.0%	355170 (54774) 75.1%
73	12303 (1535) 74.2%	1421 (240) 95.4%	305* (141) 89.5%	14028 (1495) 76.2%	318880 (49528) 75.7%	332851 (53018) 95.2%	300337* (117521) 91.3%	952068 (125047) 86.5%
75	15743 (3059) 60.1%	59* (60) 99.7%	...	15801 (3075) 60.2%	269600 (46819) 65.2%	8238* (8380) 100.0%	...	277838 (48636) 65.9%
76	7809 (1947) 80.1%	123* (94) 100.0%	...	7932* (1988) 80.3%	153569 (28780) 86.1%	24341* (19716) 100.0%	...	177910 (40637) 87.7%
80	2368* (723) 83.4%	2038 (248) 94.1%	2031 (297) 98.6%	6438 (731) 91.1%	88104 (20474) 86.7%	516278 (75688) 96.6%	2952131 (345917) 97.7%	3556513 (334457) 97.2%
ALL	325192 (6417) 72.8%	46516 (875) 93.9%	9253 (393) 98.2%	380960 (6537) 75.3%	8606893 (149287) 78.1%	9293726 (127594) 95.1%	12271558 (471608) 98.5%	30172177 (536382) 90.7%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

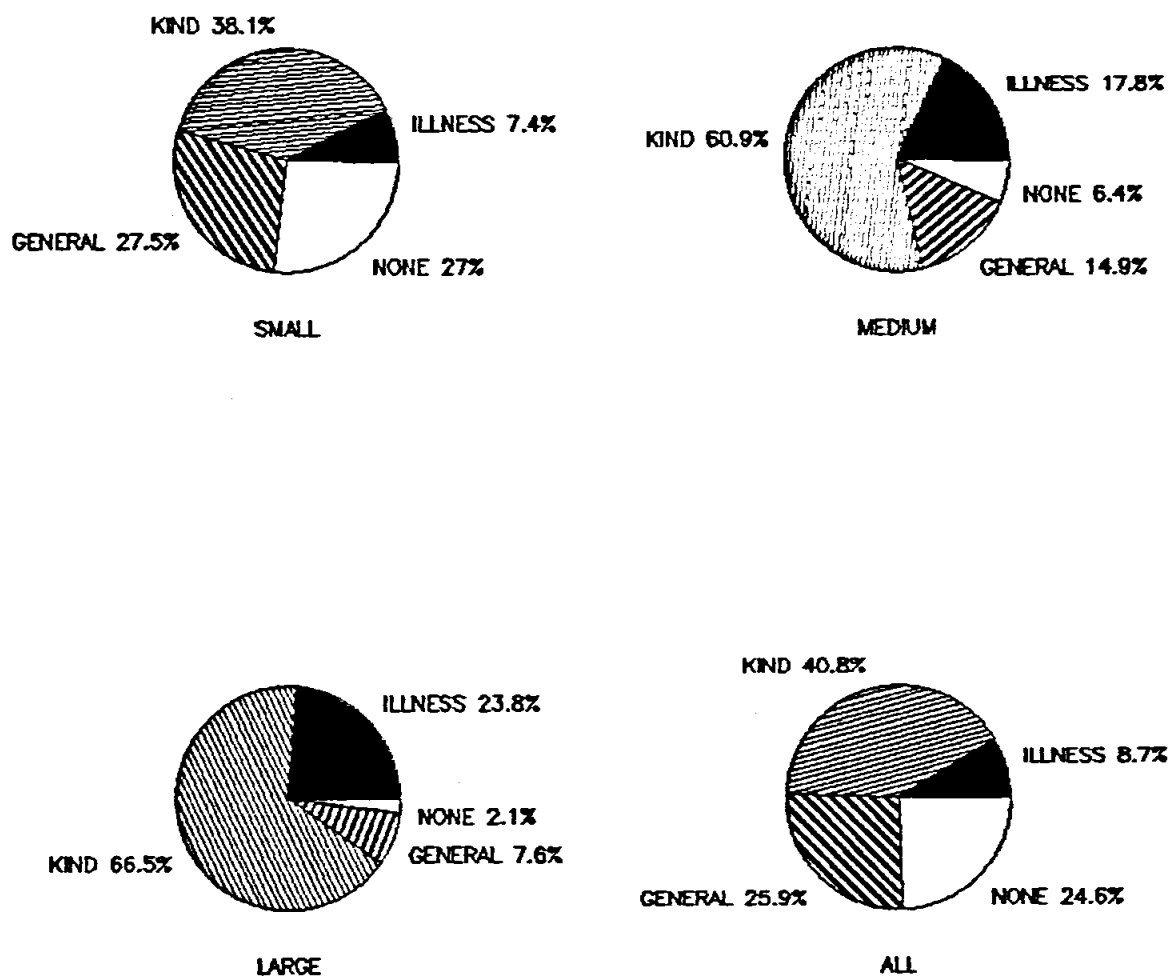
**FIGURE V - 6**  
**PLANTS WHICH KEEP ABSENTEEISM RECORDS**  
**(NOES 1981-1983)**



**FIGURE V - 7**  
**WORKERS IN PLANTS WHICH KEEP ABSENTEEISM**  
**RECORDS BY PLANT SIZE AND RECORD TYPE**  
**(NOES 1981-1983)**



**FIGURE V - 8**  
**PLANTS WHICH MAINTAIN ABSENTEEISM**  
**RECORDS BY PLANT SIZE AND RECORD TYPE**  
**(NOES 1981-1983)**





NOES QUESTIONNAIRE ITEM NO. 64  
Unscheduled Absenteeism Rate

Intent

The intent of this question was to determine the unscheduled absenteeism rate due to illness or injury.

This item was displayed on the questionnaire as:

64. What is your rate of unscheduled absenteeism?

\_\_ \_\_ \_\_ days per employee per year (If unknown, code "U K")

Notes

"Unscheduled absenteeism" was defined as the failure of an employee to report for work when scheduled. "Rate" was defined as the number of days per year per employee.

Employee absenteeism due to vacations, jury duty, pre-arranged personal leave, maternity leave, strikes, layoffs, or weather-related work cancellations was not considered unscheduled absenteeism.

A work year was considered to be 240 days per year, in those cases where calculations were performed by survey personnel.

Response coded "999", or unknown, were discarded in calculating the average unscheduled absenteeism rates displayed in the accompanying Figures and Tables.

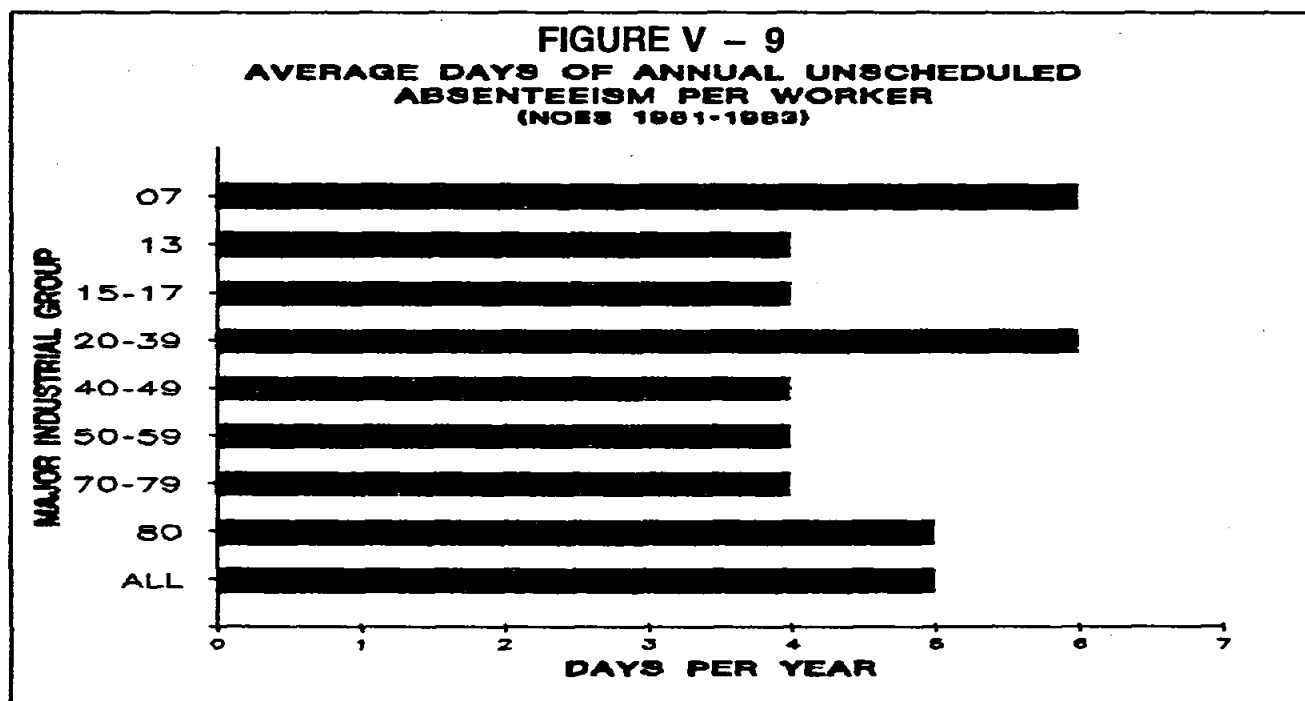
Analysis

One analysis of the responses to question 64 is presented.

Response 64 - Average unscheduled absenteeism rate

Estimates of the average unscheduled absenteeism rate (days per employee per year) is displayed in Figures V-9 and V-10, and Tables V-7 and V-8.

Figure V-9	Average days of annual unscheduled absenteeism per worker (by major industrial group)
Figure V-10	Average days of annual unscheduled absenteeism per worker (by 2-digit SIC)
Table V-7	Average unscheduled absenteeism rate (days per worker per year) (by major industrial group)
Table V-8	Average unscheduled absenteeism rate (days per worker per year) (by 2-digit SIC)



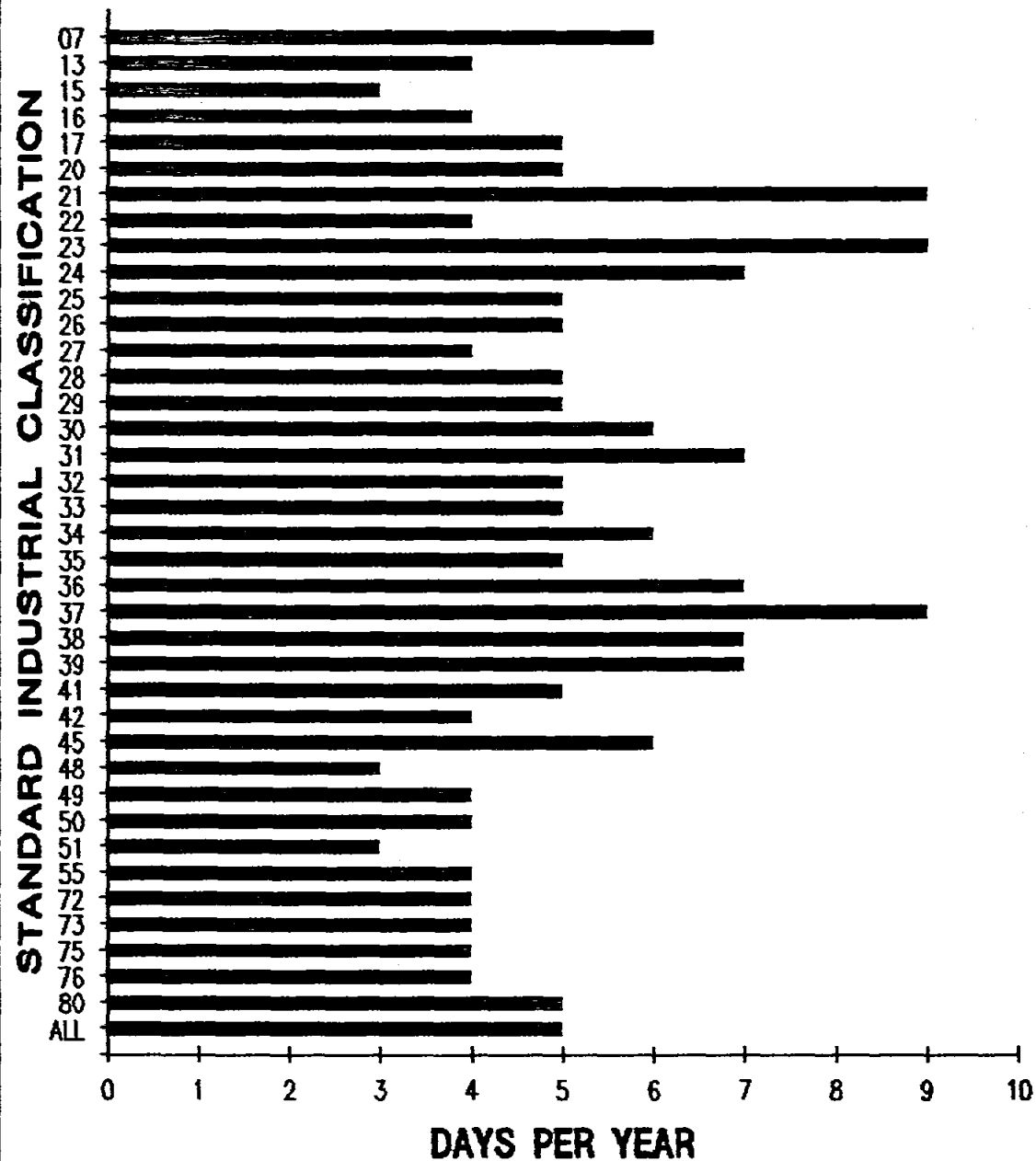
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. V-7

AVERAGE UNSCHEDULED ABSENTEEISM RATE (DAYS PER WORKER PER YEAR)

MAJOR GROUP	PLANT SIZE			ALL
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	
07	6* (3)	3* (2)	...	6* (2)
13	4* (2)	3* (1)	...	4* (1)
15-17	4 ( $<.5$ )	5 (1)	4* (2)	4 ( $<.5$ )
20-39	5 ( $<.5$ )	7 (1)	8 (1)	6 ( $<.5$ )
40-49	4 ( $<.5$ )	8 (2)	8 (1)	4 ( $<.5$ )
50-59	4 ( $<.5$ )	5* (2)	...	4 ( $<.5$ )
70-79	4 ( $<.5$ )	5 (1)	7* (2)	4 ( $<.5$ )
80	4* (2)	6* (4)	7 ( $<.5$ )	5 (1)
ALL	4 ( $<.5$ )	6 ( $<.5$ )	8 ( $<.5$ )	5 ( $<.5$ )

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE V - 10**  
**AVERAGE DAYS OF ANNUAL UNSCHEDULED**  
**ABSENTEEISM PER WORKER**  
**(NOES 1981-1983)**



## AVERAGE UNSCHEDULED ABSENTEEISM RATE (DAYS PER WORKER PER YEAR)

SIC CODE	PLANT SIZE			ALL
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	
07	6* (3)	3* (2)	...	6* (2)
13	4* (2)	3* (1)	...	4* (1)
15	3 ( $<.5$ )	7 (2)	4* (3)	3 ( $<.5$ )
16	4 (1)	6* (2)	3* (3)	4 (1)
17	5 ( $<.5$ )	4* (1)	...	5 ( $<.5$ )
20	4 (1)	7 (1)	7* (3)	5 ( $<.5$ )
21	5* (4)	...	11* (3)	9 (2)
22	4 (1)	5 (1)	5* (1)	4 (1)
23	8 (2)	9 (1)	13* (4)	9 (1)
24	7* (3)	6 (1)	4* (7)	7* (3)
25	5 (1)	6 (1)	6* (3)	5 (1)
26	5* (1)	5 (1)	5 (1)	5 (1)
27	3 (1)	4 (1)	7 (1)	4 ( $<.5$ )
28	5 (1)	7 (1)	8 (1)	5 (1)
29	5* (2)	4* (2)	7* (2)	5 (1)
30	5 (1)	7 (1)	7* (2)	6 (1)
31	9* (4)	7 (1)	5* (2)	7 (1)
32	5 (1)	5 (1)	3* (2)	5 (1)
33	5* (2)	6 (1)	8* (3)	5 (1)

SIC CODE	PLANT SIZE			ALL
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	
34	6 (1)	6 (1)	6 (1)	6 (1)
35	4 ( $<.5$ )	6 (1)	7 (2)	5 ( $<.5$ )
36	6 (1)	7 (1)	8 (1)	7 (1)
37	9 (2)	6 (1)	12 (1)	9 (1)
38	6 (1)	7 (1)	10* (5)	7 (1)
39	5* (2)	11* (5)	20* (10)	7* (2)
41	4* (1)	9* (8)	...	5* (1)
42	4 ( $<.5$ )	6 (1)	10 (2)	4 ( $<.5$ )
45	5* (2)	13* (7)	9 (1)	6 (2)
48	3* (1)	3* (1)	1* (1)	3 (1)
49	3 (1)	6 (1)	8 (1)	4 (1)
50	4 ( $<.5$ )	3 (1)	...	4 ( $<.5$ )
51	3 ( $<.5$ )	3* (3)	...	3 ( $<.5$ )
55	4 (1)	10* (7)	...	4 (1)
72	4 (1)	6* (2)	...	4 (1)
73	4 ( $<.5$ )	5 (1)	7* (2)	4 ( $<.5$ )
75	4 ( $<.5$ )	...	...	4 ( $<.5$ )
76	4 (1)	4* (2)	...	4 (1)
80	4* (2)	6* (4)	7 ( $<.5$ )	5 (1)
ALL	4 ( $<.5$ )	6 ( $<.5$ )	8 ( $<.5$ )	5 ( $<.5$ )

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**NOES QUESTIONNAIRE ITEM NO. 65**  
**Turnover Rate Among Non-Administrative Permanent Employees**

**Intent**

The intent of this question was to determine an overall turnover rate for permanent employees in non-administrative positions.

This item was displayed on the questionnaire as:

65. What is your turnover rate among permanent employees in the nonadministrative areas?

— — — % per year

**Notes**

Permanent employees are those workers expected to retain their positions on a long-term basis (more than one year). A non-administrative position is one which is directly involved with the production, packaging, inspecting, or shipping of the company product(s).

Any permanent employee who worked directly in the production, packaging, or shipping/receiving areas of the facility at least 50% of their work day was included in calculations of the turnover rate.

Temporary or seasonal employees were excluded from the calculations of turnover rate.

**Analysis**

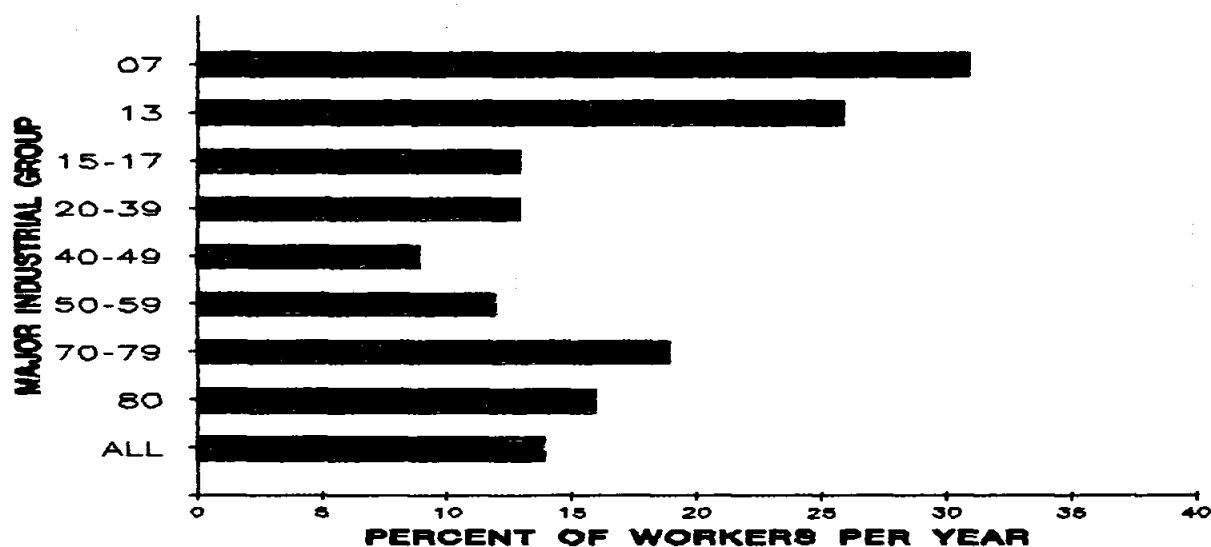
One analysis of the responses to question 65 is presented.

Response 65 - Average turnover rate among non-administrative permanent employees

Estimates of the average turnover rate among non-administrative permanent employees (percent of the workforce per year) are displayed in Figures V-11 and V-12, and Tables V-9 and V-10.

Figure V-11	Average turnover rate among non-administrative workers (by major industrial group)
Figure V-12	Average turnover rate among non-administrative workers (by 2-digit SIC)
Table V-9	Average turnover rate (% per year) among permanent workers in non-administrative areas (by major industrial group)
Table V-10	Average turnover rate (% per year) among permanent workers in non-administrative areas (by 2-digit SIC)

**FIGURE V - 11**  
**AVERAGE TURNOVER RATE AMONG**  
**NON-ADMINISTRATIVE WORKERS**  
**(NOES 1981-1983)**



NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. V-9

AVERAGE TURNOVER RATE (% PER YEAR) AMONG PERMANENT WORKERS IN NON-ADMINISTRATIVE AREAS

MAJOR GROUP	PLANT SIZE			ALL
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	
07	31* (8)	1* (1)	...	31 (7)
13	21* (10)	67* (28)	25* (18)	26* (10)
15-17	13 (1)	15 (3)	34* (33)	13 (1)
20-39	14 (1)	11 (1)	11 (2)	13 (1)
40-49	9 (1)	8* (2)	4* (1)	9 (1)
50-59	12 (2)	27* (13)	...	12 (2)
70-79	18 (4)	24 (5)	67* (35)	19 (4)
80	12* (4)	18 (2)	20 (1)	16 (2)
ALL	14 (1)	13 (1)	15 (2)	14 (1)

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

## AVERAGE TURNOVER RATE (% PER YEAR) AMONG PERMANENT WORKERS IN NON-ADMINISTRATIVE AREAS

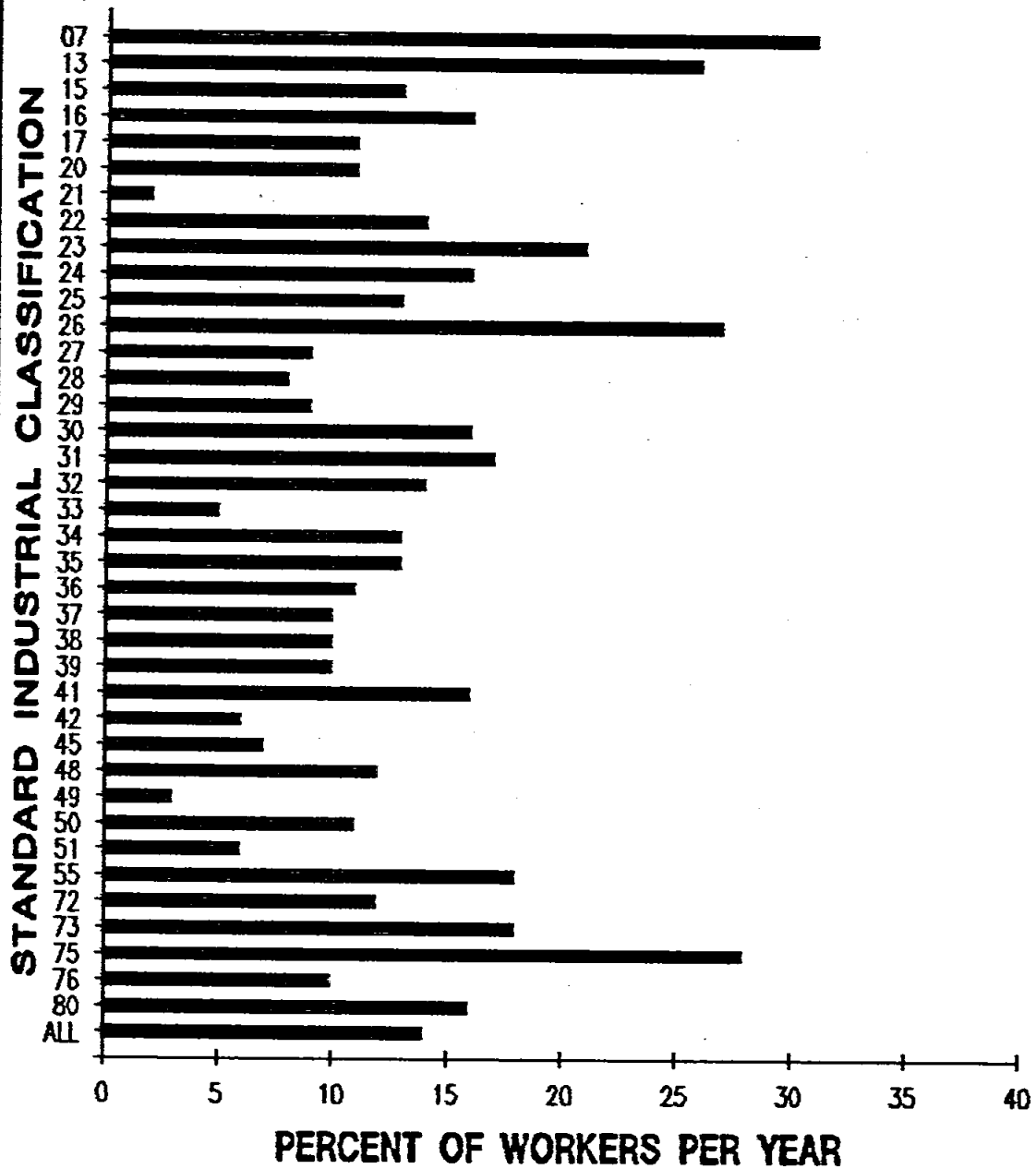
SIC CODE	PLANT SIZE			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	ALL
07	31* (8)	1* (1)	...	31 (7)
13	21* (10)	67* (28)	25* (18)	26* (10)
14	13 (1)	15 (3)	34* (33)	13 (1)
15	16 (3)	31* (13)	61* (99)	16 (3)
16	16 (3)	10* (3)	8* (4)	16 (3)
17	11 (1)	11* (3)	...	11 (1)
19	14 (1)	11 (1)	11 (2)	13 (1)
20	10 (2)	11 (2)	20* (14)	11 (2)
21	1* (1)	...	2* (1)	2* (1)
22	13* (3)	13* (3)	21* (9)	14 (3)
23	22* (6)	16 (3)	25* (8)	21 (5)
24	16* (5)	20* (10)	2* (2)	16* (5)
25	13 (2)	12 (3)	23* (14)	13 (2)
26	38* (19)	5 (1)	3* (1)	27* (13)
27	9* (2)	10 (2)	6* (2)	9 (2)
28	8 (2)	7 (1)	3 (1)	8 (2)
29	13* (20)	1* (≥.25)	5* (2)	9* (10)
30	16* (8)	16* (7)	11* (11)	16* (6)
31	22* (11)	12* (3)	7* (17)	17* (5)
32	15* (7)	11* (5)	4* (3)	14* (6)
33	5* (2)	6* (2)	9* (4)	5 (1)



SIC CODE	PLANT SIZE			ALL
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	
34	15 (3)	6 (1)	10* (3)	13 (2)
35	14 (2)	8 (1)	8 (2)	13 (1)
36	11* (4)	12 (2)	11 (2)	11* (3)
37	9* (3)	12* (5)	6* (2)	10 (1)
38	12* (5)	5* (2)	8* (4)	10* (3)
39	9* (3)	13 (3)	19* (8)	10 (2)
40	9 (1)	8* (2)	4* (1)	9 (1)
41	15* (6)	26* (6)	...	16* (6)
42	6 (1)	7* (2)	3* (1)	6 (1)
45	8* (4)	3* (2)	6* (3)	7* (3)
48	13 (3)	8 (2)	4* (3)	12 (3)
49	3 (1)	2* (1)	4* (2)	3 (1)
50	12 (2)	27* (13)	...	12 (2)
50	11 (2)	12* (5)	...	11 (2)
51	6* (2)	...	...	6* (2)
55	16* (4)	78* (120)	...	18 (4)
70	18 (4)	24 (5)	67* (35)	19 (4)
72	12 (3)	19* (7)	20* (14)	12 (3)
73	16 (4)	25 (5)	69* (36)	18 (4)
75	28* (10)	...	...	28* (10)
76	10* (4)	43* (36)	...	10* (4)
80	12* (4)	18 (2)	20 (1)	16 (2)
ALL	14 (1)	13 (1)	15 (2)	14 (1)

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE V - 12**  
**AVERAGE TURNOVER RATE AMONG**  
**NON-ADMINISTRATIVE WORKERS**  
**(NOES 1981-1983)**



**NOES QUESTIONNAIRE ITEM NO. 66**  
**Industry Maintenance of the OSHA 200 Form**

**Intent**

The intent of this question was to determine if facilities were maintaining the Summary of Occupational Injuries and Illnesses Form (OSHA 200) and to extract data from it.

This item was displayed on the questionnaire as:

66. May I see the latest Summary of Occupational Injuries and Illnesses Form (OSHA Form 200)? (OSHA regulations provide for inspection by NIOSH).

- 1 Yes
- 2 No (or company does not keep one)

**SURVEYOR: COPY THE FOLLOWING INFORMATION FROM THE OSHA FORM 200**

**Occupational Injuries**

- a. Number of deaths (column 1) \_\_\_\_\_
- b. Number of injuries with lost workdays (column 3) \_\_\_\_\_
- c. Number of injuries without lost workdays (column 6) \_\_\_\_\_

**Occupational Illnesses**

- a. Skin diseases or disorders (column 7a) \_\_\_\_\_
- b. Dust diseases of the lungs (column 7b) \_\_\_\_\_
- c. Respiratory conditions due to toxic agents (column 7c) \_\_\_\_\_
- d. Poisoning (systematic effects of toxic material) (column 7d) \_\_\_\_\_
- e. Disorders due to physical agents (column 7e) \_\_\_\_\_
- f. Disorders associated with repeated trauma (column 7g) \_\_\_\_\_
- g. Deaths (column 8) \_\_\_\_\_
- h. Number of illnesses with lost workdays (column 10) \_\_\_\_\_
- i. Number of illnesses without lost workdays (column 13) \_\_\_\_\_

## Notes

If the surveyed facility kept, and allowed access to the OSHA 200 form, a "yes" response was encoded, crediting the facility with maintaining the OSHA 200 form. If the facility refused access, or did not maintain the form, a "no" response was encoded.

In the case of access to the OSHA 200 form, field surveyors recorded the data as it existed on the copy maintained by the facility.

Examination of the question 66 information gathered during the survey changed the original intentions for data publication. First, approximately 28% of all the facilities surveyed did not maintain the OSHA 200 form. Second, viewing the data collected from the facilities which did maintain the form yielded less data than had been anticipated. For example, of the 3,219 OSHA 200 forms reviewed, 52 had data for number of deaths. The combination of these factors, in the view of the authors, created a situation where the data formats seen in this volume could not be created with a reasonable expectation of confidence in the accuracy of the published data. While the authors would be happy to share the accumulated injury/illness data with interested persons, we would suggest that access to the files maintained by the Bureau of Labor Statistics in their much larger inventory of OSHA 200 data would prove to be far more fruitful.

Accordingly, the authors elected to simply present an analysis of facility compliance with requirements to maintain an OSHA 200 log as observed in the survey sample frame.

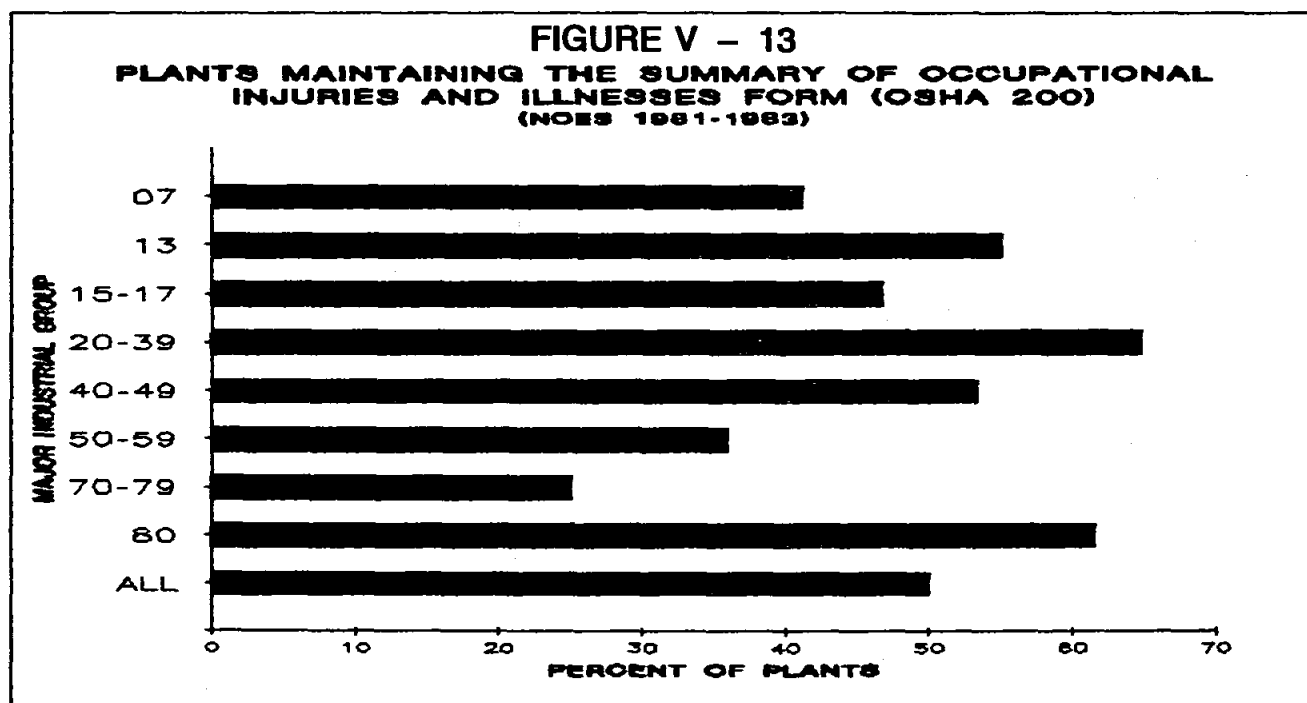
## Analysis

One analysis of the responses to question 66 is presented.

Response 66.1 - An OSHA form 200 is maintained

Estimates of the plants which maintain the OSHA 200 form, and workers in those plants (by number and proportion of the total) are displayed in Figures V-13 and V-14, and Tables V-11 and V-12.

Figure V-13	Plants maintaining the Summary of Occupational Injuries and Illnesses Form (OSHA 200) (by major industrial group)
Figure V-14	Plants maintaining the Summary of Occupational Injuries and Illnesses Form (OSHA 200) (by 2-digit SIC)
Figure V-15	Plants which maintain the Summary of Occupational Injuries and Illness Form by plant size
Table V-11	Number and percent of plants and employees in plants which maintain the Summary of Occupational Injuries and Illnesses Form (by major industrial group)
Table V-12	Number and percent of plants and employees in plants which maintain the Summary of Occupational Injuries and Illnesses Form (by 2-digit SIC)



NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. V-11

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 MAINTAIN THE SUMMARY OF OCCUPATIONAL INJURIES AND ILLNESSES FORM

MAJOR GROUP	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	2254* (1022) 40.5%	70* (67) 100.0%	...	2325* (1004) 41.3%	54895* (25360) 52.9%	7009* (6680) 100.0%	...	61905* (24034) 55.9%
13	4653 (1001) 54.1%	637* (187) 62.5%	46* (52) 100.0%	5336 (1023) 55.2%	130248 (25153) 62.3%	124996* (38715) 71.9%	31383* (35291) 100.0%	286627 (61586) 69.2%
15-17	42372 (2672) 44.9%	3707 (509) 89.4%	224* (134) 92.4%	46303 (2724) 46.9%	1138499 (59086) 54.2%	672518 (99365) 91.2%	214639* (98391) 90.9%	2025656 (138372) 65.9%
20-39	88913 (2990) 58.0%	29219 (1767) 92.0%	6220 (166) 99.2%	124352 (3547) 65.0%	3197828 (76345) 69.3%	5930152 (364968) 92.9%	8191326 (257224) 99.1%	17319306 (540281) 89.9%
40-49	26655 (2299) 50.1%	4729 (901) 80.9%	415* (136) 88.8%	31799 (2654) 53.5%	866714 (98942) 60.4%	948030 (207051) 82.2%	535872 (108960) 93.4%	2350616 (258328) 74.4%
50-59	19885 (2159) 34.1%	2158* (564) 81.1%	...	22043 (2123) 36.1%	494763 (63324) 44.0%	352501* (97493) 86.2%	...	847264 (108307) 55.3%
70-79	17234 (2473) 23.6%	1540 (257) 65.7%	311* (139) 88.0%	19085 (2457) 25.2%	406591 (67527) 29.2%	329911 (50374) 71.0%	299334* (123864) 88.2%	1035837 (117166) 47.1%
80	1151* (407) 40.5%	1419 (196) 65.5%	1794 (274) 87.0%	4363 (408) 61.7%	53970 (13105) 53.1%	383347 (53761) 71.7%	2484020 (311365) 82.2%	2921337 (305965) 79.8%
ALL	203118 (5861) 45.2%	43478 (2157) 87.0%	9011 (402) 95.4%	255607 (6310) 50.2%	6343508 (170665) 57.3%	8748464 (449913) 88.7%	11756574 (448612) 94.3%	26848546 (707974) 80.4%

\*Standard error &gt;25% of the estimate. The estimate may be unreliable.

...No facilities observed.

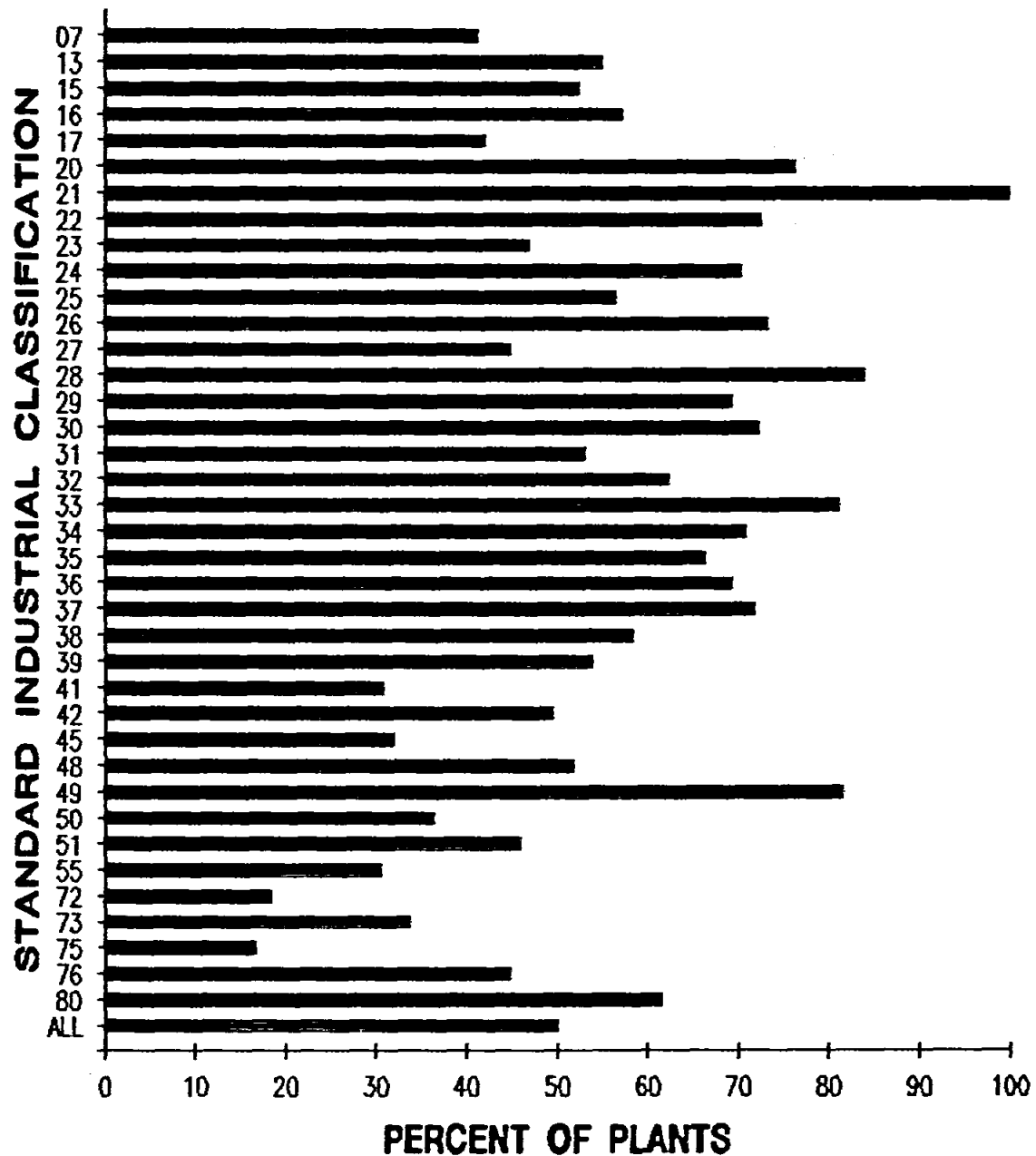
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
MAINTAIN THE SUMMARY OF OCCUPATIONAL INJURIES AND ILLNESSES FORM

SIC CODE	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	EMPLOYEES MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	2254* (1022) 40.5%	70* (67) 100.0%	...	2325* (1004) 41.3%	54895* (25360) 52.9%	7009* (6680) 100.0%	...	61905* (24034) 55.9%
13	4653 (1001) 54.1%	637* (187) 62.5%	46* (52) 100.0%	5336 (1023) 55.2%	130248 (25153) 62.3%	124996* (38715) 71.9%	31383* (35291) 100.0%	286627 (61586) 69.2%
15	12587 (1456) 50.5%	1037 (217) 93.7%	135* (100) 100.0%	13759 (1537) 52.6%	324301 (41334) 57.6%	184181 (39465) 92.9%	134799* (71218) 100.0%	643282 (92080) 71.8%
16	6077 (1023) 53.9%	1021 (185) 91.2%	88* (65) 82.7%	7187 (994) 57.4%	176197 (27942) 62.0%	197967 (44608) 95.3%	79840* (49834) 78.8%	454004 (68223) 76.5%
17	23707 (2041) 40.8%	1649 (381) 86.0%	...	25357 (2100) 42.2%	638001 (38718) 51.0%	290370* (74279) 87.7%	...	928371 (86104) 58.6%
20	8137 (513) 71.3%	2921 (445) 90.8%	559 (121) 100.0%	11617 (1211) 76.5%	315192 (12081) 81.7%	609815 (99692) 90.5%	491775 (104930) 100.0%	1416782 (110090) 91.2%
21	30* (43) 100.0%	...	79* (56) 99.6%	109* (65) 100.0%	1866* (2685) 100.0%	...	112133* (67572) 100.0%	113999* (66861) 100.0%
22	1796 (397) 61.3%	1404 (188) 88.4%	299* (80) 99.9%	3499 (488) 72.6%	77455 (10201) 73.0%	317344 (34787) 91.4%	261093* (94186) 100.0%	655891 (90458) 91.8%
23	4590 (652) 36.7%	2614 (175) 84.3%	242* (93) 100.0%	7447 (705) 47.0%	185240 (29126) 43.7%	529386 (30943) 86.8%	208437* (79559) 100.0%	923063 (85260) 74.3%
24	7177 (987) 67.0%	1148 (128) 100.0%	104* (74) 100.0%	8429 (999) 70.5%	250715 (27296) 82.6%	183585 (22297) 100.0%	92355* (52501) 100.0%	526655 (77056) 90.9%
25	1862 (407) 44.7%	1045 (135) 98.4%	119* (75) 99.6%	3026 (421) 56.6%	82939* (22793) 59.6%	250868 (35822) 97.8%	122998* (62394) 100.0%	456805 (74077) 88.1%
26	2659 (615) 64.6%	1454 (218) 92.7%	214* (73) 100.0%	4327 (613) 73.4%	113621 (18578) 82.5%	261227 (46393) 92.8%	206864* (65220) 100.0%	581712 (85737) 92.9%
27	7018 (814) 38.7%	1795 (173) 95.8%	316* (115) 100.0%	9129 (821) 45.0%	237243 (24891) 49.6%	349148 (48442) 96.7%	345750 (80151) 100.0%	932142 (114822) 78.7%
28	5010 (530) 81.2%	1116 (110) 96.2%	359 (63) 94.5%	6485 (509) 84.1%	153998 (6819) 85.2%	255912 (30212) 98.1%	456866 (97834) 95.9%	866776 (104224) 94.4%
29	581* (284) 57.4%	293* (125) 100.0%	101* (42) 100.0%	975* (329) 69.4%	34312* (16625) 83.7%	63255* (21394) 100.0%	117545* (70259) 100.0%	215112* (80699) 97.0%
30	4406 (716) 65.7%	1496* (384) 97.3%	224* (73) 99.9%	6125 (845) 72.3%	174773 (18246) 77.7%	288334* (82075) 97.9%	233647* (72848) 100.0%	696755 (103317) 92.5%
31	318* (257) 34.2%	469 (103) 82.4%	25* (24) 100.0%	812* (275) 53.3%	9905* (6167) 39.8%	111925* (28420) 82.6%	15664* (16901) 100.0%	137495 (34367) 78.1%
32	5201 (828) 59.1%	854 (141) 84.4%	184* (71) 99.9%	6239 (821) 62.4%	173311 (21483) 73.1%	188451 (33508) 90.2%	128993* (49687) 100.0%	490755 (51793) 85.3%
33	3030 (328) 73.3%	1466 (138) 99.9%	333 (62) 98.8%	4829 (353) 81.3%	118705 (9638) 85.7%	310774 (30441) 99.9%	588883 (103545) 94.8%	1018363 (108987) 95.1%

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	12286 (988) 66.3%	2975 (145) 95.3%	321* (87) 92.8%	15582 (947) 70.9%	409174 (25356) 73.7%	579827 (27847) 97.2%	329151* (102873) 93.8%	1318152 (112737) 87.7%
35	14007 (1166) 61.8%	3047 (171) 89.5%	784 (79) 100.0%	17838 (1173) 66.5%	445950 (18997) 73.5%	605303 (21547) 91.6%	1112933 (147534) 100.0%	2164186 (140666) 90.9%
36	3979 (705) 56.0%	2571 (121) 95.8%	787 (170) 100.0%	7337 (673) 69.4%	154349 (18059) 67.0%	531423 (12206) 96.2%	1182462 (196778) 100.0%	1868234 (199999) 95.0%
37	2469 (329) 62.1%	1129 (120) 94.9%	416 (92) 99.9%	4014 (315) 71.9%	109152 (14804) 85.9%	223952 (32525) 93.6%	1514008 (247233) 100.0%	1847113 (243256) 98.2%
38	1139* (290) 42.4%	823 (127) 86.0%	416* (139) 99.9%	2377 (372) 58.5%	54743 (9829) 52.3%	148549 (33335) 76.4%	460397* (129998) 100.0%	663689 (135769) 87.4%
39	3219* (828) 49.1%	598* (1095) 75.0%	338* (216) 100.0%	4155* (1423) 54.0%	95183 (19621) 57.4%	121074* (224335) 81.0%	209369* (120490) 100.0%	425626* (204102) 81.1%
41	1356* (645) 30.7%	175* (122) 34.2%	...	1530* (660) 31.0%	35323* (18309) 30.0%	24105* (16329) 29.6%	...	59428* (24332) 29.8%
42	9561 (1402) 47.7%	1063 (259) 71.8%	82* (54) 99.5%	10706 (1422) 49.6%	292595 (47724) 60.0%	185220 (41690) 71.6%	74830* (49333) 100.0%	552645 (58379) 67.3%
45	540* (390) 16.6%	590* (397) 99.9%	147* (57) 100.0%	1277* (498) 32.1%	23006* (14191) 29.7%	109332* (75829) 100.0%	264255* (77656) 100.0%	396592 (96628) 87.9%
48	7461 (1557) 50.7%	636* (213) 70.5%	34* (21) 99.0%	8130 (1614) 52.0%	263776* (72386) 62.0%	133288* (42421) 75.6%	70083* (43687) 100.0%	467148 (96445) 69.5%
49	6363* (1640) 77.5%	1862* (567) 100.0%	153* (100) 88.3%	8378 (1826) 81.7%	207331* (53201) 77.0%	425470* (151076) 100.0%	126704* (65426) 86.4%	759505 (172280) 90.3%
50	10199 (1570) 33.6%	1538* (392) 85.4%	...	11737 (1667) 36.5%	278569 (58543) 44.2%	253926* (72001) 89.7%	...	532495 (103325) 58.3%
51	4313* (1401) 47.3%	...	...	4313* (1401) 46.1%	100411* (36180) 54.3%	...	...	100411* (36180) 47.4%
55	5374* (1403) 28.4%	620* (491) 99.9%	...	5993* (1587) 30.7%	115782* (33147) 37.5%	98575* (80174) 100.0%	...	214357* (91709) 52.6%
72	3534* (884) 17.1%	429* (154) 63.6%	...	3963 (882) 18.6%	88530* (26632) 23.3%	55899* (20880) 68.0%	...	144429 (34467) 30.5%
73	4947 (965) 29.8%	988 (174) 66.3%	311* (139) 91.3%	6246 (943) 33.9%	141587 (30877) 33.6%	249671 (41245) 71.4%	299334* (123864) 91.0%	690593 (113940) 62.8%
75	4444* (1300) 17.0%	...	...	4444* (1300) 16.9%	86712* (25763) 21.0%	...	...	86712* (25763) 20.6%
76	4309* (1439) 44.2%	123* (94) 100.0%	...	4433* (1475) 44.9%	89762* (23296) 50.3%	24341* (19716) 100.0%	...	114103* (35282) 56.3%
80	1151* (407) 40.5%	1419 (196) 65.5%	1794 (274) 87.0%	4363 (408) 61.7%	53970 (13105) 53.1%	383347 (53761) 71.7%	2484020 (311365) 82.2%	2921337 (305965) 79.8%
ALL	201743 (6272) 45.2%	43075 (738) 86.9%	9011 (384) 95.6%	253828 (6045) 50.2%	6298825 (169346) 57.1%	8677850 (135245) 88.8%	11756574 (479000) 94.4%	26733249 (509562) 80.4%

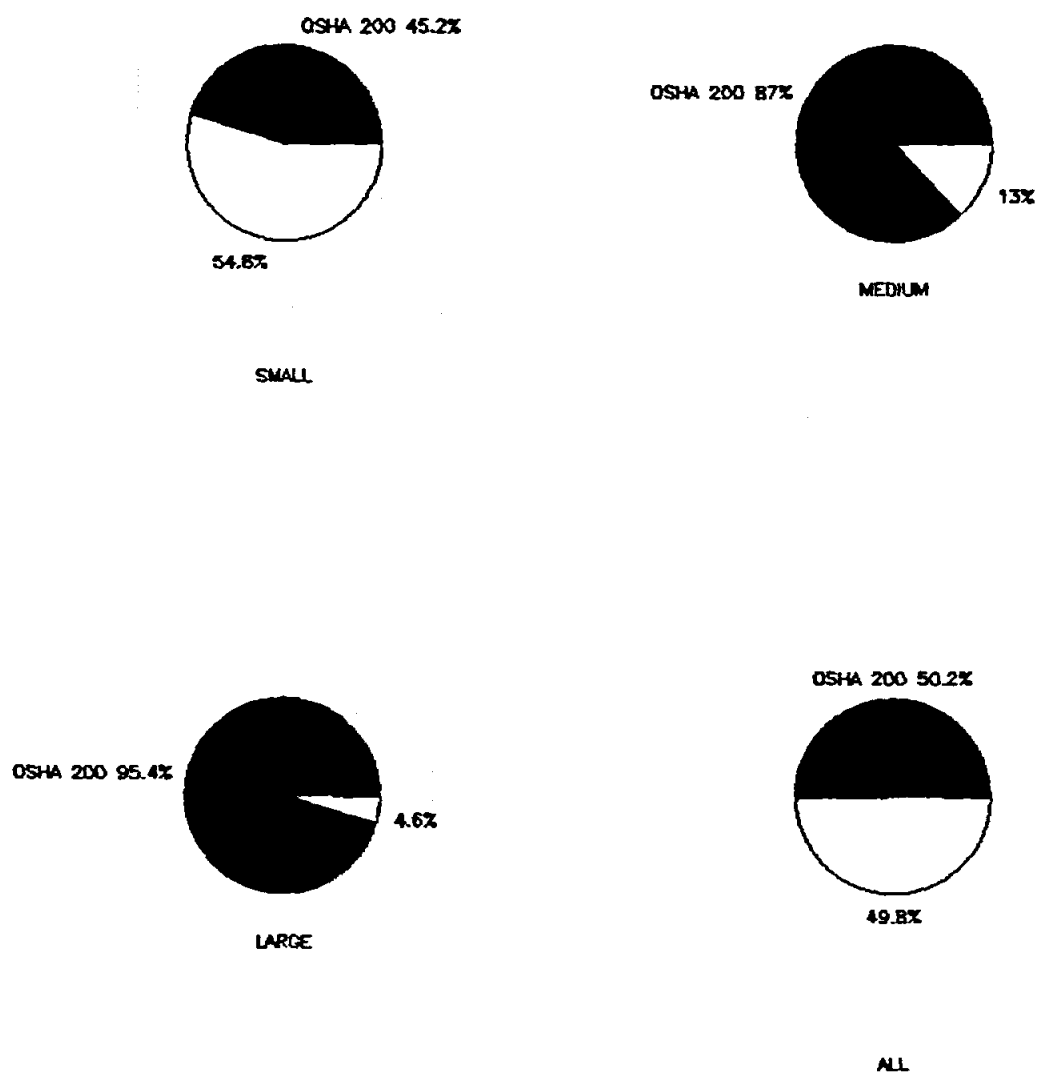
\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE V - 14**  
**PLANTS MAINTAINING THE SUMMARY OF OCCUPATIONAL**  
**INJURIES AND ILLNESSES FORM (OSHA 200)**  
**(NOES 1981-1983)**





**FIGURE V - 15**  
**PLANTS WHICH MAINTAIN THE SUMMARY OF OCCUPATIONAL**  
**INJURIES AND ILLNESSES FORM BY PLANT SIZE**  
**(NOES 1981-1983)**





## **Appendix A**

### **Descriptions of Major Industrial Groups Included In the National Occupational Exposure Survey**

**Appendix A**  
**Descriptions of Major Industrial Groups Surveyed During the NOES**  
**(See Standard Industrial Classification Manual - 1972**  
**Executive Office of the President, Office of Management and Budget)**

<b>MAJOR GROUP</b>	<b>TITLE</b>	<b>ACTIVITY</b>
<b>07</b>	<b>Agricultural Services</b>	Crop preparation services, veterinary services, lawn and garden services, and shrub and tree services
<b>13</b>	<b>Oil and Gas Extraction</b>	Operation of oil and gas field properties; drilling of oil and gas wells; oil and gas exploration services; and general oil and gas field services
<b>15-17</b>	<b>Construction</b>	Contract construction of residential and commercial buildings; construction of roads, bridges, and other heavy projects; and special trade contract construction
<b>20-39</b>	<b>Manufacturing</b>	Mechanical or chemical transformation of materials into new products, usually for resale or transfer to industrial users rather than for domestic consumption
<b>40-49</b>	<b>Transportation, Communications and Utilities</b>	Railroad and local transportation hauling, and warehousing; water and air transportation; communications; transmission and distribution of natural gas and electric energy; operation of water and sanitary services
<b>50-59</b>	<b>Wholesale and Retail Trade</b>	Wholesale distribution of automobiles, and automobile parts; distribution of construction materials, metals and ores; distribution of chemicals and petroleum; automobile dealers and repair, including gas stations

MAJOR GROUP	TITLE	ACTIVITY
70-79	Services	Laundries and dry cleaning; photographic services; beauty shops, funeral services; mailing, art, and reproduction services; cleaning, disinfecting and extermination services; research and development; automotive repair and service; miscellaneous machinery repair
80	Health Services	Medical, surgical, and other health services including hospitals and medical or dental laboratories



## **Appendix B**

### **Descriptions of Standard Industrial Classifications Included In the National Occupational Exposure Survey**

**Appendix B**  
**Descriptions of Standard Industrial Classifications Surveyed in NOES**  
**(See Standard Industrial Classification Manual - 1972**  
**Executive Office of the President, Office of Management and Budget)**

<b>SIC CODE</b>	<b>TITLE</b>	<b>ACTIVITY</b>
<b>07</b>	<b>Agricultural Services</b>	Crop preparation, veterinary, lawn, garden and tree services
<b>13</b>	<b>Oil and Gas Extraction</b>	Operation of oil and gas field properties; drilling of oil and gas wells; exploration and general oil and gas field services
<b>15</b>	<b>General Building Contractors</b>	Contract construction of residential and non-residential buildings; general contractors
<b>16</b>	<b>Construction Other than Building</b>	Highway, street, bridge and tunnel construction; water, sewer, pipeline, communication, and miscellaneous heavy construction
<b>17</b>	<b>Special Trade Contractors</b>	Plumbing, heating, air conditioning, painting and paperhanging, electrical, concrete, plastering and carpentry work; roofing and sheet metal, excavation, and installation of building equipment.
<b>20</b>	<b>Food and Kindred Products</b>	Meat packing, poultry processing, dairy production, canning, grain milling, baking and confectioneries; fats, oils, liquors, and miscellaneous food products.
<b>21</b>	<b>Tobacco Manufacturers</b>	Manufacture of cigars and cigarettes
<b>22</b>	<b>Textile Mill Products</b>	Broad woven fabric milling, cotton and man-made fiber; narrow fabric milling; knitting mills; textile dyeing and finishing, floor covering mills, yarn and thread mills; miscellaneous textiles



<b>SIC CODE</b>	<b>TITLE</b>	<b>ACTIVITY</b>
23	Apparel and Other Finished Products	Manufacture of mens and boys clothing, women's and girls outer wear and under garments/ hats and caps; fur and leather goods and waterproof out garments; miscellaneous fabricated textile products
24	Lumber and Wood Products Except Furniture	Logging camps and contractors; sawmills and planning mills; mill work, veneer and plywood production; wood containers, buildings, and mobile homes; miscellaneous wood products
25	Furniture and Fixtures	Manufacture of wood household furniture, upholstered furniture, and metal furniture; manufacture of office and public building furniture; partitions and office fixtures; miscellaneous furniture and fixtures
26	Paper and Allied Products	Operation of pulp, paper, and paperboard mills; manufacture of paperboard products, building paper, and building boards.
27	Printing and Publishing	Publishing newspapers, periodicals, and books; commercial printing and engraving; manufacture of greeting cards and blank books; printing trade services
28	Chemicals and Allied Products	Production of industrial inorganic chemicals, plastics, and synthetic rubbers and resins; biological products and medicinals; manufacture of soaps, cleaning preparations, and perfumes; paints, varnishes, and lacquers; production of industrial organic and agricultural chemicals and pesticides; inks, adhesives and miscellaneous chemical products

<b>CODE</b>	<b>TITLE</b>	<b>ACTIVITY</b>
<b>29</b>	<b>Petroleum Refining</b>	<b>Petroleum refining; production of paving and roofing materials and miscellaneous products of petroleum and coal</b>
<b>30</b>	<b>Rubber and Miscellaneous Plastic Products</b>	<b>Manufacture of tires and inner tubes; rubber and plastic hose, belting, and miscellaneous products</b>
<b>31</b>	<b>Leather and Leather Products</b>	<b>Leather tanning and finishing; boot, shoe, handbag and miscellaneous leather good manufacture.</b>
<b>32</b>	<b>Stone, Clay, Glass and Concrete Products</b>	<b>Manufacture of flat glass, glassware, glass containers, and glass products; manufacture of hydraulic cement; production brick, clay tile, pottery, and porcelain; manufacture of concrete, gypsum, plaster, ready-mix concrete; asbestos and miscellaneous non-metallic products.</b>
<b>33</b>	<b>Primary Metal Industries</b>	<b>Smelting refining, rolling, drawing, and alloying of ferrous and non-ferrous metals</b>
<b>34</b>	<b>Fabricated Metal Products, Except Machinery and Transportation Equipment</b>	<b>Fabrication of such products as cans, tinware, cutlery, metal stampings, and ordinance; manufacture of enameled iron, cast iron, and metal sanitary ware; plumbing fixtures, heating equipment, structural metal products; screw machine products; nuts and bolts; forging and electroplating services</b>

<b>CODE</b>	<b>TITLE</b>	<b>ACTIVITY</b>
35	Machinery, Except Electrical	Manufacture of steam and gas turbines, internal combustion engines, farm machinery, construction and mining machinery; production of machine tools, industrial trucks, metalworking, and special industry machinery; office, computing, refrigeration, and laundry machinery.
36	Electrical and Electronic Machinery	Production of electric transmission and distribution equipment, switch gear, control apparatus; and welding apparatus; manufacture of household appliances and electric lighting and wiring equipment for residential industrial use; radio, TV, and other electronic components
37	Transportation Equipment	Manufacture of motor vehicles, truck trailers, aircraft, ships, and boats; production of railroad equipment, missiles, travel trailers, and recreational vehicles.
38	Measuring, Analyzing, and Controlling Instruments	Manufacture of engineering and laboratory instrumentation and environmental controls for heating and cooling applications; production of industrial process controls, and measuring instruments; optical and medical instruments and photographic equipment
39	Miscellaneous Manufacturing	Production of jewelry, silverware, stainless steel ware, toys, athletic goods, artists materials, and novelty and miscellaneous items.
41	Local and Suburban Transit	Furnishing local transportation over regular routes on a regular schedule, taxicab and school buses, and terminal maintenance of passenger terminals

<b>CODE</b>	<b>TITLE</b>	<b>ACTIVITY</b>
42	Freight Transportation and Warehousing	Operation of local and "over the road" trucking services; warehousing of agricultural, refrigerated, and general warehousing, and freight terminal operation
44	Water Transportation	Operation of towing and tugboat services, marine cargo handling, and water transport services such as boat hiring, ship cleaning, and cargo salvage
45	Transportation by Air	Operation of passenger or freight airlines, flying fields, and airport terminal services
48	Communication	Furnishing telephone or telegraph services to the public, operation of radio and television broadcast facilities, and miscellaneous services such as cablevision and telecommunication operations
49	Electric, Gas, and Sanitary Services	Provision and distribution of electrical and natural gas service, water supplies, and sanitary or sewage systems
50	Wholesale Trade Durable Goods	Wholesale distribution of new and used vehicles, parts, and tires; lumber, plywood, and millwork; operation of metal and coal marketing and distribution facilities; and miscellaneous scrap and waste salvage facilities
51	Wholesale Trade-Non-Durable Goods	Wholesale distribution of chemicals and allied products, petroleum, and petroleum products such as butane and naptha
55	Automotive Dealers and Gasoline Service Stations	Operation of facilities for the retail sale of automobiles, auto and home supply stores, and gasoline service stations

<b>CODE</b>	<b>TITLE</b>	<b>ACTIVITY</b>
<b>72</b>	<b>Personal Services</b>	Provision of laundry services, including dry cleaning and carpet or upholstery cleaning; operation of photography studios, beauty shops, and miscellaneous personal services such as health clubs
<b>73</b>	<b>Business Services</b>	Provision of services to business, including; direct mail, photocopying, photography and graphics services; building services such as cleaning, disinfecting and exterminating; the operation of research and development laboratories, photofinishing services, and commercial testing
<b>75</b>	<b>Automotive Services</b>	Operation of vehicle rental facilities; automotive repair shops, including engine and body work, and car washer
<b>76</b>	<b>Miscellaneous Repair Services</b>	Operation of facilities for the repair of: radios, televisions, refrigeration, and electrical or electronic equipment; clock and jewelry repair, specialized repair services, and welding and armature wending services
<b>80</b>	<b>Health Services</b>	Operation of general medical and surgical hospitals, medical laboratories, and other services such as blood banks an medical photography



## **Appendix C**

### **4-Digit Standard Industrial Classifications Surveyed In the National Occupational Exposure Survey**

**APPENDIX D. 4-DIGIT STANDARD INDUSTRIAL CLASSIFICATIONS  
SURVEYED IN DURING THE NOES**

<b><u>SIC Code</u></b>	<b><u>Description</u></b>
0723	Crop Preparation Services for Market, Except Cotton Ginning
0742	Veterinary Services for Animal Specialties
0782	Lawn and Garden Services
0783	Ornamental Shrub and Tree Services
1311	Crude Petroleum and Natural Gas Extraction
1381	Drilling Oil and Gas Wells
1382	Oil and Gas Field Exploration Services
1389	Oil and Gas Field Services, Not Elsewhere Classified
1521	General Contractors-Single Family Houses
1522	General Contractors-Residential Buildings, Other Than Single Family
1541	General Contractors-Industrial Buildings and Warehouses
1542	General Contractors-Nonresidential Buildings, Other than Industrial Buildings and Warehouses
1611	Highway and Street Construction, Except Elevated Highways
1622	Bridge, Tunnel, and Elevated Highway Construction
1623	Water, Sewer, Pipe Line, Communication and Power Line Construction
1629	Heavy Construction, Not Elsewhere Classified
1711	Plumbing, Heating (Except Electric), and Air Conditioning
1721	Painting, Paper Hanging, and Decorating
1731	Electrical Work
1741	Masonry, Stone Setting, and Other Stonework
1742	Plastering, Drywall, Acoustical and Insulation Work
1743	Terrazzo, Tile, Marble and Mosaic Work
1751	Carpentering
1752	Floor Laying and Other Floorwork, Not Elsewhere Classified
1761	Roofing and Sheet Metal Work
1771	Concrete Work
1781	Water Well Drilling
1791	Structural Steel Erection
1793	Glass and Glazing Work
1794	Excavating and Foundation Work
1796	Installation or Erection of Building Equipment, Not Elsewhere Classified
1799	Special Trade Contractors, Not Elsewhere Classified
2011	Meat Packing Plants
2013	Sausages and Other Prepared Meat Products
2016	Poultry Dressing Plants
2017	Poultry and Egg Processing
2022	Cheese, Natural and Processed
2023	Condensed and Evaporated Milk
2024	Ice Cream and Frozen Desserts
2026	Fluid Milk
2032	Canned Specialties
2033	Canned Fruits, Vegetables, Preserves, Jams, and Jellies
2034	Dried and Dehydrated Fruits, Vegetables and Soup Mixes
2035	Pickled Fruits and Vegetables, Vegetable Sauces and Seasonings, and Salad Dressings



<u>SIC Code</u>	<u>Description</u>
2037	Frozen Fruits, Fruit Juices and Vegetables
2038	Frozen Specialties
2041	Flour and Other Grain Mill Products
2047	Dog, Cat and Other Pet Food
2048	Prepared Feeds and Feed Ingredients for Animals and Fowls, Not Elsewhere Classified
2051	Bread and Other Bakery Products, Except Cookies and Crackers
2052	Cookies and Crackers
2065	Candy and Other Confectionary Products
2066	Chocolate and Cocoa Products
2067	Chewing Gum
2075	Soybean Oil Mills
2077	Animal and Marine Fats and Oils
2079	Shortening, Table Oils, Margarine and Other Edible Fats and Oils, Not Elsewhere Classifies
2082	Malt Beverages
2084	Wines, Brandy, and Brandy Spirits
2085	Distilled, Rectified, and Blended Liquours
2086	Bottled and Canned Soft Drinks and Carbonated Waters
2087	Flavoring Extracts and Flavoring Sirups, Not Elsewhere Classified
2091	Canned and Cured Fish and Seafoods
2092	Fresh or Frozen Packaged Fish and Seafoods
2095	Roasted Coffee
2097	Manufactured Ice
2098	Macaroni, Spaghetti, Vermicelli, and Noodles
2099	Food Preparations, Not Elsewhere Classified
2111	Cigarettes
2121	Cigars
2141	Tobacco Stemming and Redrying
2211	Broad Woven Fabric Mills, Cotton
2221	Broad Woven Fabric Mills, Man-Made Fiber and Silk
2231	Broad Woven Fabric Mills, Wool (Including Dyeing and Finishing)
2241	Narrow Fabrics and Other Smallwares Mills: Cotton, Wool, Silk, and Man-Made Fiber
2251	Women's Full Length and Knee Length Hosiery
2252	Hosiery, Except Women's Full Length and Knee Length Hosiery
2253	Knit Outerwear Mills
2254	Knit Underwear Mills
2257	Circular Knit Fabric Mills
2258	Warp Knit Fabric Mills
2261	Finishers of Broad Woven Fabrics of Cotton
2262	Finishers of Broad Woven Fabrics of Man-Made Fiber and Silk
2269	Finishers of Textiles, Not Elsewhere Classified
2271	Woven Carpets and Rugs
2272	Tufted Carpets and Rugs
2281	Yarn Spinning Mills: Cotton, Man-Made Fibers and Silk
2282	Yarn Texturizing, Throwing, Twisting, and Winding Mills: Cotton, Man-Made Fibers and Silk
2283	Yarn Mills, Wool, Including Carpet and Rug Yarn
2284	Thread Mills

<u>SIC Code</u>	<u>Description</u>
2291	Felt Goods, Except Woven Felts and Hats
2295	Coated Fabrics, Not Rubberized
2297	Nonwoven Fabrics
2298	Cordage and Twine
2311	Men's, Youths', and Boys' Suits, Coats, and Overcoats
2321	Men's, Youths', and Boys' Shirts (Except Work Shirts) and Nightwear
2322	Men's, Youths' and Boys' Underwear
2323	Men's, Youths' and Boys' Neckwear
2327	Men's, Youths', and Boys' Separate Trousers
2328	Men's, Youths', and Boys' Work Clothing
2329	Men's, Youths', and Boys' Clothing, Not Elsewhere Classified
2331	Women's, Misses', and Juniors' Blouses, Waists, and Shirts
2335	Women's, Misses', and Juniors' Dresses
2337	Women's, Misses', and Juniors' Suits, Skirts, and Coats
2339	Women's, Misses', and Juniors' Outerwear, Not Elsewhere Classified
2341	Women's, Misses', Children's, and Infants' Underwear and Nightwear
2342	Brassieres, Girdles, and Allied Garments
2352	Hats and Caps, Except Millinery
2361	Girls', Children's, and Infants' Dresses, Blouses, Waists, and Shirts
2369	Girls', Children's, and Infants' Outerwear, Not Elsewhere Classified
2371	Fur Goods
2381	Dress and Work Gloves, Except Knit and All-Leather
2384	Robes and Dressing Gowns
2385	Raincoats and Other Waterproof Outer Garments
2386	Leather and Sheep Lined Clothing
2387	Apparel Belts
2389	Apparel and Accessories, Not Elsewhere Classified
2391	Curtains and Draperies
2392	Housefurnishings, Except Curtains and Draperies
2393	Textile Bags
2394	Canvas and Related Products
2395	Pleating, Decorative and Novelty Stitching, and Tucking for the Trade
2396	Automotive Trimmings, Apparel Findings, and Related Products
2399	Fabricated Textile Products, Not Elsewhere Classified
2411	Logging Camps and Logging Contractors
2421	Sawmills and Planing Mills, General
2426	Hardwood Dimension and Planing Mills
2431	Millwork
2434	Wood Kitchen Cabinets
2435	Hardwood Veneer and Plywood
2436	Softwood Veneer and Plywood
2439	Structural Wood Members, Not Elsewhere Classified
2448	Wood Pallets and Skids
2449	Wood Containers, Not Elsewhere Classified
2451	Mobile Homes

<u>SIC Code</u>	<u>Description</u>
2452	Prefabricated Wood Buildings and Components
2491	Wood Preserving
2492	Particleboard
2499	Wood Products, Not Elsewhere Classified
2511	Wood Household Furniture, Except Upholstered
2512	Wood Household Furniture, Upholstered
2514	Metal Household Furniture
2515	Mattresses and Bedsprings
2517	Wood Television, Radio, Phonograph, and Sewing Machine Cabinets
2521	Wood Office Furniture
2522	Metal Office Furniture
2531	Public Building and Related Furniture
2541	Wood Partitions, Shelving, Lockers, and Office and Store Fixtures
2542	Metal Partitions, Shelving, Lockers, and Office and Store Fixtures
2599	Furniture and Fixtures, Not Elsewhere Classified
2611	Pulp Mills
2621	Paper Mills, Except Building Paper Mills
2631	Paperboard Mills
2641	Paper Coating and Glazing
2642	Envelopes
2643	Bags, Except Textile Bags
2645	Die-Cut Paper and Paperboard and Cardboard
2647	Sanitary Paper Products
2648	Stationery, Tablets, and Related Products
2649	Converted Paper and Paperboard Products, Not Elsewhere Classified
2651	Folding Paperboard Boxes
2652	Set-up Paperboard Boxes
2653	Corrugated and Solid Fiber Boxes
2654	Sanitary Food Containers
2655	Fiber Cans, Tubes, Drums, and Similar Products
2661	Building Paper and Building Board Mills
2711	Newspapers: Publishing, Publishing and Printing
2721	Periodicals: Publishing, Publishing and Printing
2731	Books: Publishing and Printing
2732	Book Printing
2741	Miscellaneous Publishing
2751	Commercial Printing, Letterpress and Screen
2752	Commercial Printing, Lithographic
2753	Engraving and Plate Printing
2754	Commercial Printing, Gravure
2761	Manifold Business Forms
2771	Greeting Card Publishing
2782	Blankbooks, Looseleaf Binders and Devices
2789	Bookbinding and Related Work
2791	Typesetting
2793	Photoengraving
2812	Alkalies and Chlorine
2813	Industrial Gases
2819	Industrial Inorganic Chemicals, Not Elsewhere Classified

<u>SIC Code</u>	<u>Description</u>
2821	Plastics Materials, Synthetic Resins, and Nonvulcanizable Elastomers
2822	Synthetic Rubber (Vulcanizable Elastomers)
2824	Synthetic Organic Fibers, Except Cellulosic
2831	Biological Products
2833	Medicinal Chemicals and Botanical Products
2834	Pharmaceutical Preparations
2841	Soap and Other Detergents, Except Specialty Cleaners
2842	Specialty Cleaning, Polishing, and Sanitation Preparations
2843	Surface Active Agents, Finishing Agents, Sulfonated Oils and Assistants
2844	Perfumes, Cosmetics, and Other Toilet Preparations
2851	Paints, Varnishes, Lacquers, Enamels, and Allied Products
2865	Cyclic (Coal Tar) Crudes, and Cyclic Intermediates, Dyes, and Organic Pigments (Lakes and Toners)
2869	Industrial Organic Chemicals, Not Elsewhere Classified
2873	Nitrogenous Fertilizers
2874	Phosphatic Fertilizers
2875	Fertilizers, Mixing Only
2879	Pesticides and Agricultural Chemicals, Not Elsewhere Classified
2891	Adhesives and Sealants
2893	Printing Ink
2895	Carbon Black
2899	Chemicals and Chemical Preparations, Not Elsewhere Classified
2911	Petroleum Refining
2951	Paving Mixtures and Blocks
2952	Asphalt Felts and Coatings
2992	Lubricating Oils and Greases
3011	Tires and Inner Tubes
3021	Rubber and Plastics Footwear
3031	Reclaimed Rubber
3041	Rubber and Plastics Hose and Belting
3069	Fabricated Rubber Products, Not Elsewhere Classified
3079	Miscellaneous Plastics Products
3111	Leather Tanning and Finishing
3131	Boot and Shoe Cut Stock and Findings
3142	House Slippers
3143	Men's Footwear, Except Athletic
3144	Women's Footwear, Except Athletic
3149	Footwear, Except Rubber, Not Elsewhere Classified
3161	Luggage
3171	Women's Handbags and Purses
3172	Personal Leather Goods, Except Women's Handbags and Purses
3199	Leather Goods, Not Elsewhere Classified
3211	Flat Glass
3221	Glass Containers
3229	Pressed and Blown Glass and Glassware, Not Elsewhere Classified
3231	Glass Products, Made of Purchased Glass
3241	Cement, Hydraulic
3251	Brick and Structural Clay Tile

<u>SIC Code</u>	<u>Description</u>
3253	Ceramic Wall and Floor Tile
3255	Clay Refractories
3259	Structural Clay Products, Not Elsewhere Classified
3261	Vitreous China Plumbing Fixtures and China and Earthenware Fittings and Bathroom Accessories
3262	Vitreous China Table and Kitchen Articles
3264	Porcelain Electrical Supplies
3269	Pottery Products, Not Elsewhere Classified
3271	Concrete Block and Brick
3272	Concrete Products, Except Block and Brick
3273	Ready-Mixed Concrete
3275	Gypsum Products
3281	Cut Stone and Stone Products
3291	Abrasive Products
3292	Asbestos Products
3293	Gaskets, Packing, and Sealing Devices
3295	Minerals and Earths, Ground or Otherwise Treated
3296	Mineral Wool
3312	Blast Furnaces (Including Coke Ovens), Steel Works, and Rolling Mills
3315	Steel Wire Drawing and Steel Nails and Spikes
3316	Cold Rolled Steel Sheet, Strip, and Bars
3317	Steel Pipe and Tubes
3321	Gray Iron Foundries
3322	Malleable Iron Foundries
3324	Steel Investment Foundries
3325	Steel Foundries, Not Elsewhere Classified
3332	Primary Smelting and Refining of Lead
3339	Primary Smelting and Refining of Nonferrous Metals, Not Elsewhere Classified
3341	Secondary Smelting and Refining of Nonferrous Metals
3351	Rolling, Drawing, and Extruding of Copper
3353	Aluminum Sheet, Plate, and Foil
3355	Aluminum Rolling and Drawing, Not Elsewhere Classified
3356	Rolling, Drawing, and Extruding of Nonferrous Metals, Except Copper and Aluminum
3357	Drawing and Insulating of Nonferrous Wire
3361	Aluminum Foundries (Castings)
3362	Brass, Bronze, Copper, Copper Base Alloy Foundries (Castings)
3369	Nonferrous Foundries (Castings), Not Elsewhere Classified
3398	Metal Heat Treating
3399	Primary Metal Products, Not Elsewhere Classified
3411	Metal Cans
3412	Metal Shipping Barrels, Drums, Kegs, and Pails
3421	Cutlery
3423	Hand and Edge Tools, Except Machine Tools and Hand Saws
3425	Hand Saws and Saw Blades
3429	Hardware, Not Elsewhere Classified
3431	Enameled Iron and Metal Sanitary Ware
3432	Plumbing Fixture Fittings and Trim (Brass Goods)
3433	Heating Equipment, Except Electric and Warm Air Furnaces
3441	Fabricated Structural Metal

<u>SIC Code</u>	<u>Description</u>
3442	Metal Doors, Sash, Frames, Molding, and Trim
3443	Fabricated Plate Work (Boiler Shops)
3444	Sheet Metal Work
3446	Architectural and Ornamental Metal Work
3448	Prefabricated Metal Buildings and Components
3449	Miscellaneous Metal Work
3451	Screw Machine Products
3452	Bolts, Nuts, Screws, Rivets, and Washers
3462	Iron and Steel Forgings
3463	Nonferrous Forgings
3465	Automotive Stampings
3466	Crowns and Closures
3469	Metal Stampings, Not Elsewhere Classified
3471	Electroplating, Plating, Polishing, Anodizing and Coloring
3479	Coating, Engraving and Allied Services, Not Elsewhere Classified
3483	Ammunition, Except for Small Arms, Not Elsewhere Classified
3484	Small Arms
3493	Steel Springs, Except Wire
3494	Valves and Pipe Fittings, Except Plumbers' Brass Goods
3495	Wire Springs
3496	Miscellaneous Fabricated Wire Products
3497	Metal Foil and Leaf
3498	Fabricated Pipe and Fabricated Pipe Fittings
3499	Fabricated Metal Products, Not Elsewhere Classified
3511	Steam, Gas, and Hydraulic Turbines and Turbine Generator Set Units
3519	Internal Combustion Engines, Not Elsewhere Classified
3523	Farm Machinery and Equipment
3524	Garden Tractors and Lawn and Garden Equipment
3531	Construction Machinery and Equipment
3532	Mining Machinery and Equipment, Except Oil Field Machinery and Equipment
3533	Oil Field Machinery and Equipment
3534	Elevators and Moving Stairways
3535	Conveyors and Conveying Equipment
3536	Hoists, Industrial Cranes, and Monorail Systems
3537	Industrial Trucks, Tractors, Trailers, and Stackers
3541	Machine Tools, Metal Cutting Types
3542	Machine Tools, Metal Forming Types
3544	Special Dies and Tools, Die Sets, Jigs and Fixtures, and Industrial Molds
3545	Machine Tool Accessories and Measuring Devices
3546	Power Driven Hand Tools
3547	Rolling Mill Machinery and Equipment
3549	Metalworking Machinery, Not Elsewhere Classified
3551	Food Products Machinery
3552	Textile Machinery
3553	Woodworking Machinery
3554	Paper Industries Machinery
3555	Printing Trades Machinery and Equipment
3559	Special Industry Machinery, Not Elsewhere Classified
3561	Pumps and Pumping Equipment

<u>SIC Code</u>	<u>Description</u>
3562	Ball and Roller Bearings
3563	Air and Gas Compressors
3564	Blowers and Exhaust and Ventilation Fans
3565	Industrial Patterns
3566	Speed Changers, Industrial High Speed Drives, and Gears
3567	Industrial Process Furnaces and Ovens
3568	Mechanical Power Transmission Equipment, Not Elsewhere Classified
3569	General Industrial Machinery and Equipment, Not Elsewhere Classified
3572	Typewriters
3573	Electronic Computing Equipment
3579	Office Machines, Not Elsewhere Classified
3582	Commercial Laundry, Dry Cleaning, and Pressing Machines
3585	Air Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment
3586	Measuring and Dispensing Pumps
3589	Service Industry Machines, Not Elsewhere Classified
3592	Carburetors, Pistons, Piston Rings, and Valves
3599	Machinery, Except Electrical, Not Elsewhere Classified
3612	Power, Distribution, and Specialty Transformers
3613	Switchgear and Switchboard Apparatus
3621	Motors and Generators
3622	Industrial Controls
3623	Welding Apparatus, Electric
3629	Electrical Industrial Apparatus, Not Elsewhere Classified
3631	Household Cooking Equipment
3632	Household Refrigerators and Home and Farm Freezers
3633	Household Laundry Equipment
3634	Electric Housewares and Fans
3635	Household Vacuum Cleaners
3639	Household Appliances, Not Elsewhere Classified
3641	Electric Lamps
3643	Current-Carrying Wiring Devices
3644	Noncurrent-Carrying Wiring Devices
3645	Residential Electric Lighting Fixtures
3646	Commercial, Industrial, and Institutional Electric Lighting Fixtures
3647	Vehicular Lighting Equipment
3648	Lighting Equipment, Not Elsewhere Classified
3651	Radio and Television Receiving Sets, Except Communication Types
3652	Phonograph Records and Pre-recorded Magnetic Tape
3661	Telephone and Telegraph Apparatus
3662	Radio and Television Transmitting, Signaling, and Detection Equipment and Apparatus
3671	Radio and Television Receiving Type Electron Tubes, Except Cathode Ray
3672	Cathode Ray Television Picture Tubes
3673	Transmitting, Industrial, and Special Purpose Electron Tubes
3674	Semiconductors and Related Devices
3675	Electronic Capacitors

<u>SIC Code</u>	<u>Description</u>
3676	Resistors, for Electronic Applications
3677	Electronic Coils, Transformers and Other Inductors
3678	Connectors, for Electronic Applications
3679	Electronic Components, Not Elsewhere Classified
3691	Storage Batteries
3693	Radiographic X-ray, Fluoroscopic X-ray, Therapeutic X-ray, and Other X-ray Apparatus and Tubes; Electromedical and Electrotherapeutic Apparatus
3694	Electrical Equipment for Internal Combustion Engines
3699	Electrical Machinery, Equipment, and Supplies, Not Elsewhere Classified
3711	Motor Vehicles and Passenger Car Bodies
3713	Truck and Bus Bodies
3714	Motor Vehicle Parts and Accessories
3715	Truck Trailers
3721	Aircraft
3724	Aircraft Engines and Engine Parts
3728	Aircraft Parts and Auxillary Equipment, Not Elsewhere Classified
3731	Ship Building and Repairing
3732	Boat Building and Repairing
3743	Railroad Equipment
3751	Motorcycles, Bicycles, and Parts
3761	Guided Missiles and Space Vehicles
3792	Travel Trailers and Campers
3799	Transportation Equipment, Not Elsewhere Classified
3811	Engineering, Laboratory, Scientific, and Research Instruments and Associated Equipment
3822	Automatic Controls for Regulating Residential and Commercial Environments and Appliances
3823	Industrial Instruments for Measurement, Display, and Control of Process Variables and Related Products
3824	Totalizing Fluid Meters and Counting Devices
3825	Instruments for Measuring and Testing of Electricity and Electrical Signals
3829	Measuring and Controlling Devices, Not Elsewhere Classified
3832	Optical Instruments and Lenses
3841	Surgical and Medical Instruments and Apparatus
3842	Orthopedic, Prosthetic, and Surgical Appliances and Supplies
3843	Dental Equipment and Supplies
3851	Ophthalmic Goods
3861	Photographic Equipment and Supplies
3873	Watches, Clocks, Clockwork Operated Devices, and Parts
3911	Jewelry, Precious Metal
3914	Silverware, Plated Ware, and Stainless Steel Ware
3931	Musical Instruments
3942	Dolls
3944	Games, Toys, and Children's Vehicles; Except Dolls and Bicycles
3949	Sporting and Athletic Goods, Not Elsewhere Classified
3951	Pens, Mechanical Pencils, and Parts



<u>SIC Code</u>	<u>Description</u>
3952	Lead Pencils, Crayons, and Artists' Materials
3953	Marking Devices
3955	Carbon Paper and Inked Ribbons
3961	Costume Jewelry and Costume Novelties, Except Precious Metal
3962	Feathers, Plumes, and Artificial Trees and Flowers
3963	Buttons
3964	Needles, Pins, Hooks and Eyes, and Similar Notions
3991	Brooms and Brushes
3993	Signs and Advertising Displays
3995	Burial Caskets
3996	Linoleum, Asphalted-Felt-Base, and Other Hard Surface Floor Coverings, Not Elsewhere Classified
3999	Manufacturing Industries, Not Elsewhere Classified
4013	Switching and Terminal Establishments
4111	Local and Suburban Transit
4119	Local Passenger Transportation, Not Elsewhere Classified
4121	Taxicabs
4151	School Buses
4172	Maintenance and Service Facilities for Motor Vehicle Passenger Transportation
4212	Local Trucking Without Storage
4214	Local Trucking With Storage
4221	Farm Product Warehousing and Storage
4222	Refrigerated Warehousing
4224	Household Goods Warehousing and Storage
4225	General Warehousing and Storage
4226	Special Warehousing and Storage, Not Elsewhere Classified
4231	Terminal and Joint Terminal Maintenance Facilities for Motor Freight Transportation
4454	Towing and Tugboat Service
4463	Marine Cargo Handling
4469	Water Transportation Services, Not Elsewhere Classified
4511	Air Transportation, Certificated Carriers
4521	Air Transportation, Noncertificated Carriers
4582	Airports and Flying Fields
4583	Airport Terminal Services
4612	Crude Petroleum Pipe Lines
4783	Packing and Crating
4811	Telephone Communication (Wire or Radio)
4821	Telegraph Communication (Wire or Radio)
4832	Radio Broadcasting
4833	Television Broadcasting
4899	Communication Services, Not Elsewhere Classified
4911	Electric Services
4922	Natural Gas Transmission
4923	Natural Gas Transmission and Distribution
4924	Natural Gas Distribution
4932	Gas and Other Services Combined
4941	Water Supply
4952	Sewerage Systems
4953	Refuse Systems
5012	Automobiles and Other Motor Vehicles

<u>SIC Code</u>	<u>Description</u>
5013	Automotive Parts and Supplies
5014	Tires and Tubes
5031	Lumber, Plywood and Millwork
5039	Construction Materials, Not Elsewhere Classified
5051	Metals Service Centers and Offices
5052	Coal and Other Minerals and Ores
5093	Scrap and Waste Materials
5161	Chemicals and Allied Products
5171	Petroleum Bulk Stations and Terminals
5172	Petroleum and Petroleum Products Wholesalers, Except Bulk Stations and Terminals
5521	Motor Vehicle Dealers (Used Only)
5531	Auto and Home Supply Stores
5541	Gasoline Service Stations
7211	Power Laundries, Family and Commercial
7212	Garment Pressing, and Agents for Laundries and Dry Cleaners
7213	Linen Supply
7214	Diaper Service
7216	Dry Cleaning Plants, Except Rug Cleaning
7217	Carpet and Upholstery Cleaning
7219	Laundry and Garment Services, Not Elsewhere Classified
7221	Photographic Studios, Portrait
7231	Beauty Shops
7261	Funeral Service and Crematories
7299	Miscellaneous Personal Services
7331	Direct Mail Advertising Services
7332	Blueprinting and Photocopying Services
7333	Commercial Photography, Art, and Graphics
7339	Stenographic Services; and Reproduction Services, Not Elsewhere Classified
7341	Window Cleaning
7342	Disinfecting and Exterminating Services
7349	Cleaning and Maintenance Services to Dwellings and Other Buildings, Not Elsewhere Classified
7391	Research and Development Laboratories
7395	Photofinishing Laboratories
7397	Commercial Testing Laboratories
7399	Business Services, Not Elsewhere Classified
7512	Passenger Car Rental and Leasing, Without Drivers
7513	Truck Rental and Leasing, Without Drivers
7519	Utility Trailer and Recreational Vehicle Rental
7531	Top and Body Repair Shops
7534	Tire Retreading and Repair Shops
7535	Paint Shops
7538	General Automotive Repair Shops
7539	Automotive Repair Shops, Not Elsewhere Classified
7542	Car Washes
7549	Automotive Services, Except Repair and Car Washes
7622	Radio and Television Repair Shops
7623	Refrigeration and Air Conditioning Service and Repair Shops
7629	Electrical and Electronic Repair Shops, Not Elsewhere Classified
7631	Watch, Clock, and Jewelry Repair

**SIC Code****Description**

7641	Reupholstery and Furniture Repair
7692	Welding Repair
7694	Armature Rewinding Shops
7699	Repair Shops and Related Services, Not Elsewhere Classified
8062	General Medical and Surgical Hospitals
8071	Medical Laboratories
8072	Dental Laboratories
8091	Health and Allied Services, Not Elsewhere Classified
8411	Museums and Art Galleries



**Appendix D**  
**Technical Notes**

#### **A. The Sampling Frame and Sources of Data**

Listings from the Bureau of the Census publication County Business Patterns - 1979 (CBP)<sup>7</sup> provided data needed to establish sampling rates in the NOES while listings from the 1980 Dun and Bradstreet Market Inventory (DMI)<sup>8</sup> were used to select individual establishments to be surveyed. Supplementing these lists for completeness was considered, but was not done because of the costs involved and extensive coverage of the DMI. Coverage of construction and manufacturing establishments was emphasized in the NOES by defining these categories to include a broad range of SICs. Conversely, finance, mining, and mineral processing establishments were excluded. Mining and mineral processing establishments were excluded because they are the subject of a separate NIOSH survey.

An initial screening operation was done to select a sample of establishments employing eight or more employees and operating in one of the target SIC's of the NOES (See Appendix B). This screening was carried out as a telephone survey which identified establishments still in business and eligible for the survey during the 1981-1983 data collection period.

#### **B. The Sampling Plan**

The sample design developed for NOES maximized the reliability of estimates of numbers of employees. Although estimates of facilities are available using the methodology developed in NOES, breakdown by industry or data on the number of firms with specific characteristics was assigned lower priority in developing the sample design.

The design of NOES made use of prior experience from the 1972-1974 NOHS. The sampling plan attempted to produce estimates with minimum variance for a fixed cost by considering strata determined by number of employees at the worksite. The NOHS data provided guidance as to the method of stratification and most efficient sampling rates in strata. Eleven strata were defined as follows: 8-19, 20-49, 50-99, 100-249, 250-499, 500-999, 1000-1499, 1500-2499, 2500-4999, 5000 + employees, and those for which employment totals were not available. The two largest categories (2500-4999, and 5000 + employees) were treated separately from the others, since they represented a substantial expenditure of time for the surveyor teams and would affect calculation of variances of the survey results.

The NOES used a stratified two-stage sampling strategy for most of the sample. The first stage of sampling involved selection of a sample of 98 PSUs. With the exception of samples of very large establishments drawn irrespective of geographic location, the interviewed sample was confined to these 98 PSUs. The second stage (within PSU) selection for establishments was done using a systematic selection procedure. Very large establishments (2,500 or more employees) were treated separately in order to maintain more nearly equal probabilities of selection across establishments.

Figure D-1 is an outline of the sampling strategy followed in the NOES. A total of 604 PSUs were defined for the sampling process. PSUs were defined geographically with the county as the primary unit. Some PSUs consisted of a single county, e.g., Orange County, California. Other PSUs were made up of counties that constituted a SMSA in 1980, which in a few cases crossed state boundaries: e.g., Cincinnati SMSA consisting of Dearborn County, Indiana; Boone, Campbell, and Kenton Counties in Kentucky; and Brown, Clermont, Hamilton, and Warren Counties in Ohio. The 604 PSUs included 446,125 establishments eligible for the survey.

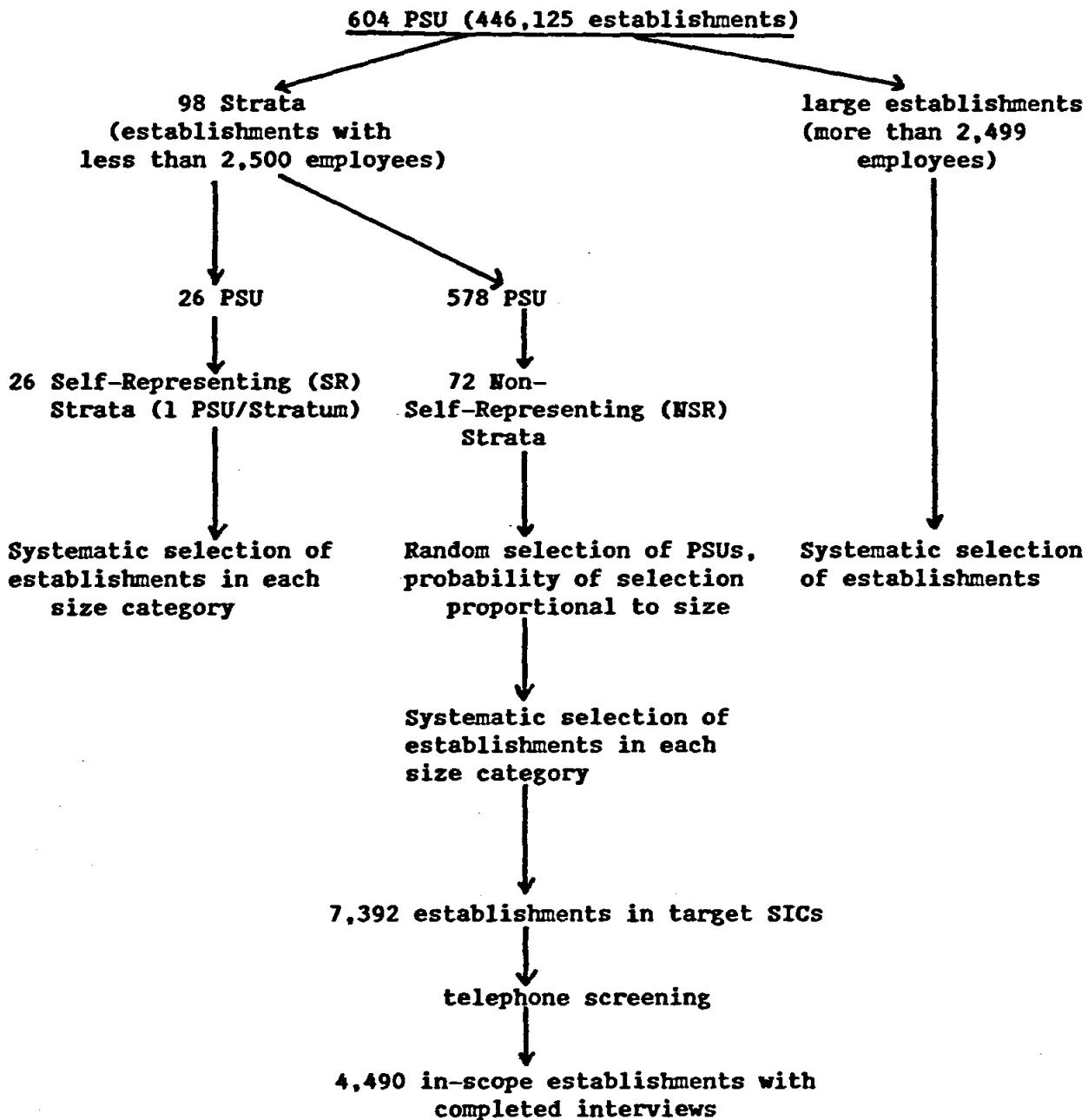
The 604 PSUs were stratified into 98 strata. The purpose of stratification was to obtain groups of PSUs which were of equal size and were homogeneous with respect to variables of interest in the NOES. Some of the criteria used for designing strata included: proportion of employees in firms where high potential exposure to health hazards might be found (e.g., chemical, rubber, or leather industries), geography (census region), and SMSA or non-SMSA. The 98 strata consisted of 26 self-representing (SR) strata, made up of 1 large PSU each, and 72 non-self-representing (NSR) strata made up of the remaining 578 PSUs.

The selection of establishments with less than 2,500 employees was done from 98 PSUs, one from each of the 26 SR and 72 NSR strata. A systematic sample of establishments in each of the 26 PSUs making up the SR strata was designated to be interviewed. Samples were selected independently across establishment size classes, where size was defined as the size of the workforce at that work site. PSUs in the 72 NSR strata from which establishments were to be selected were chosen as a random sample with probability of selection proportional to the number of establishments contributed by that PSU to that stratum, i.e., the measure of size of that PSU. One PSU was chosen from each NSR stratum. Systematic selection of establishments in each NSR PSU was then done using methods identical to those for selecting establishments from SR PSUs.

The sample of establishments employing 2,500 or more employees was designated without regard to sampling from PSUs. Samples in each of the size categories with these employee levels were determined using systematic selection of all firms nationwide with 2,500 or more employees.

Sample establishments were contacted by telephone to confirm that those establishments had enough employees and operated in an appropriate SIC to be included in the survey, and would participate in it. This sample was known as the 'screening' sample and consisted of 7,392 establishments. After screening, 4,504 establishments were designated for field interview, and all but 125 of these establishments were interviewed. Substitutes were found for 111 of the 125, making the total number of completed interviews 4,490. The effective refusal rate of establishments for participation in the NOES was .3 percent.

**FIGURE D-1. OUTLINE OF SAMPLING STRATEGY  
(NOES 1981-1983)**





### C. Estimation Procedures

National estimates of the number of employees and number of establishments conducting business in the SIC ranges covered by the NOES were obtained by assigning appropriate weighting factors to sample establishments and using these factors to project figures found in the NOES sample to the national level. A probability of selection was associated with each of the steps followed in determining the sample establishments which were interviewed. Inverses of these probabilities define sample weights which indicate how much each establishment's results contribute to national totals.

Inflation estimates of totals were obtained by multiplying each establishment's totals by its sample weight and summing across establishments. Ratio estimation was also used to improve the precision of the estimates. The inflation estimates were followed by two stages of ratio estimation before the final publication estimate was determined. The first stage ratio estimation factor was based on establishment counts by employee size class as reported from the Dun and Bradstreet list<sup>8</sup>. The second stage ratio estimation factor was based on employee counts (establishment counts for establishments with greater than 1,000 employees) by employee size class by SIC as reported in the County Business Patterns (CBP)<sup>7</sup>.

Each estimate had a sample error associated with it. Furthermore, the complex survey design and estimation procedures used in the NOES lead to approximate and complicated expressions for estimation of the sampling error. Calculation of the sampling errors was handled using the method of replications. The method required that the estimation procedures be independently carried out several times (replicated) using subsamples of the original sample, and that the variance of the replicate estimates be used to measure the variance of the full sample. Sampling error was taken as the square root of the variance. This system was flexible enough to provide measures reliable for all tabulations planned for the NOES data. Use of ratio estimation and the method of replications to make national projections from the NOES sample data is detailed in Volume II of this series, Sampling Methodology<sup>3</sup>. The methods are summarized here.

### Estimation of Totals

The inflation estimate is an initial estimate of industrial characteristics on the national level. Inflation weights, defined as the inverse of the probability of selecting the sample establishments from which characteristics are to be estimated, are used in determining the estimate. If  $Y$  is a characteristic of all establishments, with  $y$  the value of that characteristic found in the sample, the simple inflation estimate  $Y_1$  would be:

$$Y_1 = W \times y$$

where  $W$  is the inflation weight. For example, suppose  $y = 100$  employees reported working in a sample of establishments with probability of selection  $f = .05$ . The simple inflation estimate  $Y_1$  of all employees working in the category from which the sample was selected would be  $Y_1 = (1/.05) \times 100 = 2,000$  employees.

The simple inflation estimate involves only characteristics of the sample. When more information about the target population is available, more precise estimates for totals can be obtained through the use of ratio estimation. Ratio estimation uses independent sources of information about sample characteristics to determine an estimate which is often more precise than one determined from inflation estimates.

As an example, consider a characteristic  $x$  estimated from the sample, such as the number of employees in an industry surveyed in the NOES. Suppose  $X$  is a measure of the same characteristic but obtained from an independent source. Then the ratio  $r = X/x$  may be used to alter the inflation estimate  $Y_1$  described above. If  $Y_1$  is an inflation estimate of a NOES item, the ratio estimate  $Y_2 = Y_1 \times r = W \times y \times r$  may be more precise than  $Y_1$  alone. In ratio estimation the ratio  $(X/x)$  should vary in the same proportion as  $(Y/Y_1)$ . In the NOES, two stages of ratio estimation were used, first using number of establishments and then using number of employees. The Dun and Bradstreet<sup>8</sup> and County Business Pattern<sup>7</sup> listings of all establishments were used as outside sources in calculating the ratios. These ratios were then used to correct the initial inflation estimates ( $Y_1$ ). These corrected estimates are presented in this volume.

### Estimation of Sampling Error

Sampling error (also called standard error or standard deviation) refers to the deviation of actual values of the characteristic being studied from values of that characteristic estimated from the survey results. In the NOES, sampling errors were the result of estimates being based on a sample of plants. The sampling error is a measure of the precision of the estimate of total numbers of employees (or plants). Statistically, sampling error is defined as the square root of the variance, where the variance for a group of independent observations  $x_1 \dots x_n$  with mean  $\bar{X}$  is defined as:

$$\sum_{i=1}^n (x_i - \bar{x})^2 / (n-1).$$

The chances are about 68 out of 100 that an estimate calculated from the NOES sample would differ from results of a survey of all plants eligible to be included in the NOES by more than one standard error. The chances are 95 out of 100 that the difference would be less than twice the standard error and 99 out of 100 that it would be less than 2 1/2 times as large.

The method of Balanced Repeated Replications (BRR)<sup>5</sup> was used to estimate NOES variances. This method is one of a class of methods of calculating variances by resampling from the sample many times. BRR in the NOES uses random subsamples generated by combinations of data from pairs defined by PSUs in each of the SR and NSR strata. Sixty-four pairs (half-samples) and 32 replicates were formed. The half-samples are the repeated replications of BRR. They are "balanced" because the replicates were determined from pairs.

Thirty-two replicates for BRR were defined. Each replicate included one member from each of the 64 pairs. Which member to choose from each pair ('first' or 'second') was determined using a random number table.

To use the technique, estimates of characteristics in each of the replicates were found using the ratio estimation procedures described for the full sample estimation process. Variances in each replicate were then found, and summed. Variances were found using the standard formula:

$$\text{Var } (x') = \left( \sum_{r=1}^n (x_r - x_0)^2 \right) / r, \text{ where}$$

$\text{Var } (x')$  = variance of characteristic x

$x_r$  = estimate of the characteristic x made from the rth replicate,

$x_0$  = estimate of characteristic x made from the full sample.

Estimates  $x_0$  of characteristic x were calculated for each replicate using the same methodologies to calculate weights and ratio estimates as were used for the full sample. Since each replicate was a 50 percent subsample of the total sample, numerical values for the inflation weights used in the estimation procedures varied from those used for calculations with the entire sample. Half of the 32 weights (1 for each of the 32 replicates) were zero if the establishment was not in the replicate, and half were about twice as large as for the entire sample.

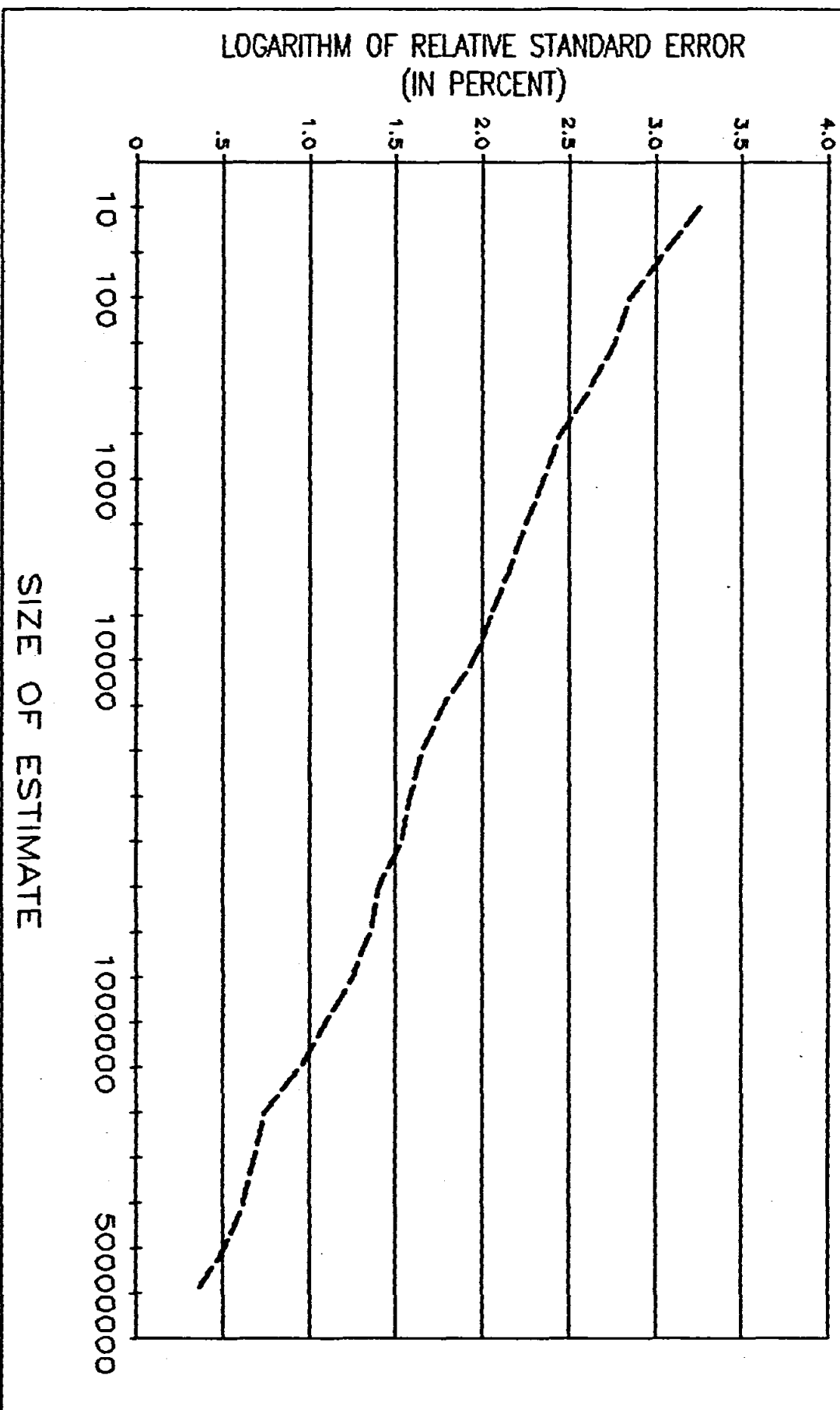
Sampling error in the NOES was taken as the square root of the variance:

$$\text{S.E. } (x') = \sqrt{\text{Var } (x')}$$

A graph relating relative standard error of the estimate of numbers of employees to the magnitude of the estimate is shown in Figure D-2. This graph may be used to determine standard errors for estimates of numbers of employees which are not presented in this volume. An example of the use of the graph is also given.

# FIGURE D-2

## RELATIVE STANDARD ERRORS FOR ESTIMATES OF NUMBER OF EMPLOYEES



Example of chart use: An estimate of 1,000,000 employees (on scale at bottom of chart) has a relative standard error of 1.1% (on scale at the left of the chart), or a standard error of 11,000 (1.1% of 1,000,000).

#### D. Sampling Error

Much of the analysis in the NOES was to be industry-by-industry breakdowns. For these kinds of analyses, the samples of industries should have had approximately equal reliability. This would have lead to a sample design with roughly equal sample sizes by industry. On the other hand, an efficient sample for analysis of statistics for all industries combined would require that the sample size in each industrial sector be proportional to that sector's contribution to the total number of establishments eligible for the survey. Data from the NOES on the distributions of both establishments and employees was also important. An efficient sample design for statistics on employees would use higher sampling rates for larger establishments than for smaller ones. For statistics on establishments, however, the number of plants, rather than their size, would be important.

The sample design ultimately developed for the NOES maximized the reliability of estimates of numbers of employees. Sampling errors resulted from the use of this one sampling design. For example, the probability of selection of certain establishments in some primary sampling units was so large that all establishments in certain size classes would have been included in the sample. This sampling with certainty in some primary sampling units occurred either because of few establishments in that size class in the sampling unit or because of the required sample size. Operational constraints also affected sampling error.

Sampling error is also reflected in the calculation of standard errors. The calculation of variances using standard statistical formulas assumes that sample observations are collected independently of one another, and that a uniform sampling rate is used for the entire sample. In the NOES sampling scheme, however, this assumption does not apply.

The sample selection methods used for NOES result in variance estimates that are slightly biased (usually overestimates), regardless of the type of variance estimation used. In this sense estimation of the variance is a conservative estimate. These biases arise because only one PSU was selected from each of the size strata considered, so some strata had to be combined in the variance estimation procedure to obtain meaningful results. Combining PSU's from different strata introduced an extra element of variance for the estimation procedure; two sample PSU's could have been selected from each stratum at, however, the cost of a decrease in efficiency of the sampling scheme. Also, systematic sampling of establishments within each sample PSU was used to select establishments. Defining half-samples for BRR from samples already determined by a systematic selection procedure also tends to yield slight overestimates of the variance.

## E. Undersampling in the NOES

Valid use of the ratio means in the estimation process requires low standard errors and consequently, appropriate sample sizes. This requirement is especially important in the NOES, since estimates from several subgroups (the individual industrial groups) are needed. The coefficient of variation of size<sup>5</sup> was used as a screening mechanism to determine if enough establishments in the target SICs had been surveyed to give useful results. The coefficient of variation of size is defined as (coefficient of variation)/(size of sample). Since establishments surveyed in a given target SIC varied widely as to the number of employees a Poisson approximation was used, making the coefficient of variation of size:

$$C_x = \frac{1}{\sqrt{Mn}}$$

where M = mean number of establishments surveyed per employee size group

n = total number of establishments surveyed in the target SIC.

A value of  $C_x = .25$  was used as a cutoff value for results from individual SICs to be included in the results presented in this volume.

**Appendix E**

**National Occupational Exposure Survey  
Preface and Part I Questionnaire**

## NATIONAL OCCUPATIONAL EXPOSURE SURVEY

Preface

**A**

1

DUPLICATE INTO EACH CARD

ID START DATE FACILITY ID

0 1 0 M M D D Y Y

2 4 5 6 11 12 17

Facility Name

18 52

Address

18 52

City State Zip Code

18 41 42 44 48 49

Legal Owner(s)

18 52

Area Code Telephone Number

53 55 56 58 59 62

Survey End Date

M M D D Y Y

63 65 67

IF MAILING ADDRESS OR PERSON TO CONTACT CONCERNING INFORMATION  
ABOUT THE SURVEY IS DIFFERENT FROM THAT INDICATED ABOVE, LIST  
THE CORRECT MAILING ADDRESS AND CONTACT BELOW.

**E**

1

Facility Name

18 52

Address

18 52

City State Zip Code

18 41 42 44 48 49

Attention

18 52

Area Code Telephone Number

53 55 56 58 59 62

DEPARTMENT OF  
HEALTH AND HUMAN SERVICES  
PUBLIC HEALTH SERVICE  
CENTERS FOR DISEASE CONTROL  
NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH  
4676 COLUMBIA PARKWAY  
CINCINNATI, OHIO 45226



## Part I – Management Interview

- ### \*\*\* GENERAL FACILITY INFORMATION \*\*\*

- 709

**10. How many hours per shift?**

34 35 (If irregular, code "99").

**11. How many people are on your payroll for all shifts at the present time?**

**Males** \_\_\_\_\_  
36                      40

**Females**                                
                    41                      45

**Total**      46    $\longleftrightarrow$    50

12. Of this total number, how many are normally in the work areas as opposed to the administrative or other areas?

15 55

**13. Are there any labor unions operating in this facility?**

56

1 No

**2 Yes; list complete union names and acronyms (initials)**

**CARD 4**

### Union Names

**Acronym**

18 24

25 31

**32** **38**

**39** **45**

46 52

53 59

60 60

14. Is there a formally established health unit at this facility? <sub>18</sub>

- 1 Yes, physician in charge
- 2 Yes, registered nurse in charge
- 3 Yes, licensed practical nurse in charge
- 4 Yes, other in charge
- 5 No

15. Do you have an employee at this facility with formal first-aid training, who has been formally designated to provide emergency medical treatment? <sub>19</sub>

- 1 Yes, full-time
- 2 Yes, part-time
- 3 No

16. Do you have on your payroll one or more on-site physicians to give your employees medical care? <sub>20</sub>

- 1 Yes, full-time
- 2 Yes, part-time
- 3 No

17. Do you have a formal arrangement with any outside source (physicians or clinics) to give your employees access to the care of a physician? <sub>21</sub>

- 1 Yes, physician will travel to this facility on call
- 2 Yes, at clinic (not at this facility)
- 3 Yes, physician is based at this facility either full or part-time
- 4 No

18. Estimate the average number of physician hours that are devoted to your facility per week.

22 — 25 hours per week

19. Does this facility have one or more nurses on the payroll to provide care for employees? <sub>26</sub>

- 1 Yes
- 2 No (Skip to Question 21)

20. How many registered nurses and licensed practical nurses are on the payroll at this facility?

RN 27 — 29

LPN 30 — 32

21. Estimate the average number of nursing hours that are devoted to your facility per week.

33 — — 36 hours

22. Do you provide the following examinations or tests to all or to selected groups of employees on a periodic basis?

	No	Yes, All	Yes, All Exec. & Mgmt Only	Yes, All Production Workers Only	Yes, for Selected Mgmt and/or Production Workers
Opthalmology <sub>37</sub>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
Audiometric <sub>38</sub>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
Blood tests <sub>39</sub>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
Urine tests <sub>40</sub>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
Pulmonary function <sub>41</sub>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
Chest X-rays <sub>42</sub>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
Allergy/Sensitization <sub>43</sub>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
Immunizations (flu, etc.) <sub>44</sub>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
23. Before new employees are hired or placed, are they required to take a medical examination? <sub>45</sub>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
24. Do you record health information about a new employee on some regular form? <sub>46</sub>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
25. Do you require medical examinations of your employees who return to work after an illness? <sub>47</sub>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
26. Do you require medical examinations of your employees when their employment is terminated? (Exit examination) <sub>48</sub>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>

27. How long are medical records and other health information records retained?

49 — — 51 Years (If "forever" code "999")  
(If "unknown" code "UK \_")

**\*\*\* INDUSTRIAL HYGIENE AND SAFETY PRACTICES \*\*\***

28. Do you employ full-time individuals at this facility whose major responsibilities are in the area of prevention of occupational injuries or illnesses? <sub>52</sub>

- 1 Yes, injury prevention
- 2 Yes, illness prevention
- 3 Yes, both injuries and illnesses
- 4 No (Skip to Question 30).

29. How many full-time occupational health and safety specialists are employed at this facility?

53 54 Safety (injuries)  
55 56 Health (illnesses)

For each of those individuals, please write in the appropriate activity number from the activity clusters listed below:

CLUSTER NO.

Individual # 1 <sub>57</sub> —	1: Administers (directs, manages) Plans and develops programs, Advises top level management.
Individual # 2 <sub>58</sub> —	#2: Inspects work place to identify hazards. Investigates to determine the cause of injuries/illnesses.
Individual # 3 <sub>59</sub> —	#3: Analyzes plans or specs. to identify hazards, develops operating procedures to control hazards.
Individual # 4 <sub>60</sub> —	#4: Provides education and training.
Individual # 5 <sub>61</sub> —	#5: Performs and analyzes tests to monitor for the presence of dusts, gases, etc.
Individual # 6 <sub>62</sub> —	#6: Performs engineering design to control hazards.
Individual # 7 <sub>63</sub> —	
Individual # 8 <sub>64</sub> —	
Individual # 9 <sub>65</sub> —	
Individual # 10 <sub>66</sub> —	
Individual # 11 <sub>67</sub> —	
Individual # 12 <sub>68</sub> —	

30. Has your facility received industrial hygiene services on a consulting basis during the past 12 months? <sub>69</sub>

- 1 Yes, from government sources
- 2 Yes, from non-government sources
- 3 No

31. Has your facility received occupational safety services on a consulting basis during the past 12 months? <sub>70</sub>

- 1 Yes, from government sources
- 2 Yes, from non-government sources
- 3 No

32. Do you have a program under which you regularly or periodically monitor the presence of physical agents such as heat, vibration, radiation, noise, and magnetic fields? <sub>71</sub>

- 1 No (Skip to Question 34)
- 2 Yes (Circle yes or no for each physical agent listed below:)

	<u>Yes</u>	<u>No</u>
1. Heat <sub>72</sub>	1	2
2. Vibration <sub>73</sub>	1	2
3. Radiation <sub>74</sub>	1	2
4. Noise <sub>75</sub>	1	2
5. Magnetic fields <sub>76</sub>	1	2
6. Other <sub>77</sub>	1	2

33. How long do you retain the records of the monitoring program?

78 79 Years (If "forever" code "99")  
(If "unknown" code "UK")

CARD 6  
1

34. Do you have a program under which you regularly or periodically monitor the presence of fumes, gases, mists, dusts, or vapors? <sub>18</sub>

- 1 Yes
- 2 No (Skip to Questions 38)

35. How is this monitoring conducted? <sub>19</sub>

- 1 Sample collection with laboratory analysis (Skip to Question 37)
- 2 Direct reading instruments
- 3 Both

36. Which types of direct reading instruments are used in the monitoring program? Circle "yes" or "no" for each type listed below:

	<u>Yes</u>	<u>No</u>
1. Direct mass measurement tests <sub>20</sub>	1	2
2. Fibrous aerosol monitors <sub>21</sub>	1	2
3. Detector tubes <sub>22</sub>	1	2
4. Infrared (I.R.) gas monitors <sub>23</sub>	1	2
5. Ultraviolet (U.V.) gas monitors <sub>24</sub>	1	2
6. Gas chromatograph monitors <sub>25</sub>	1	2
7. Electrochemical monitors <sub>26</sub>	1	2
8. Other "wet" chemical methods <sub>27</sub>	1	2

37. How long do you retain the records of the monitoring program?

28 29 Years (If "forever" code "99")  
(If "unknown" code "UK")

38. Have any substitutions of chemical materials been made within the last 5 years?<sub>30</sub>

- 1 Yes  
2 No (Skip to Question 41)

39. Were any of these substitutions made for the primary purpose of reducing employee exposures?<sub>31</sub>

- 1 Yes  
2 No

40. Were any of these substitutions made as a result of inspections of this facility by federal, state, or local authorities?<sub>32</sub>

- 1 Yes  
2 No

41. Have any major equipment or process modifications been made within the last 5 years?<sub>33</sub>

- 1 Yes  
2 No (Skip to Question 45)

42. Were any of these modifications made for the primary purpose of reducing employee exposures?<sub>34</sub>

- 1 Yes  
2 No

43. Were any of these modifications made as a result of inspections of this facility by federal, state, or local authorities?<sub>35</sub>

1 Yes

2 No

44. What was the nature of the modification?<sub>36</sub>

1 A redesign of the process

2 Enclosing the process

3 Equipment substitution

4 A redesign of the equipment

5 Combination of the above

6 Not listed here

45. Does this facility recirculate exhaust air from any process or plant area?<sub>37</sub>

1 Yes

2 No (Skip to Question 47)

46. What processes or areas are involved?

_____	_____
_____	_____
_____	_____

47. Are there areas in this facility in which personal protective devices or equipment are required or recommended?<sub>38</sub>

1 Yes, required

2 Yes, recommended

3 Yes, both

4 No (Skip to Question 53)

48. Who provides personal protective devices?<sub>39</sub>

1 individual employees

2 employer

3 both

4 other (specify) \_\_\_\_\_

49. Who has been designated to see to it that personal protective devices and equipment are serviced and maintained?<sub>40</sub>

1 individual employees

2 employer representative

3 both

4 no one

5 other Specify \_\_\_\_\_



50. In those instances where employees refuse to wear protective devices or fail to wear them properly, are corrective measures taken? <sub>41</sub>

1 Yes

2 No (Skip to Question 53)

51. Do those corrective measures involve economic penalties? <sub>42</sub>

1 Yes

2 No (Skip to Question 53)

52. Have any economic penalties been assessed in the past 12 months? <sub>43</sub>

1 Yes

2 No, we know of no instances where violations of company policy have occurred within the last 12 months.

3 No, although we know that there was a minimum of one violation of company policy within the last 12 months.

53. Do you have a program under which you regularly or periodically conduct safety inspections of this facility? <sub>44</sub>

1 Yes

2 No (Skip to Question 56)

54. Are written results of these safety inspections required? <sub>45</sub>

1 Yes

2 No

55. Are the results of the safety inspections posted or otherwise made routinely available to affected employees? <sub>46</sub>

1 Yes

2 No

56. Do you have a regularly scheduled preventive maintenance program? <sub>47</sub>

1 Yes

2 No

57. Do you have a regularly scheduled formal safety training program for your employees? <sub>48</sub>

1 Yes

2 No

58. Do you have a program under which you regularly or routinely assess the employee's awareness of safety rules? <sub>49</sub>

1 Yes

2 No

59. In those instances where employees are found to be in violation of the safety rules, are corrective measures taken?<sub>50</sub>

- 1 Yes
- 2 No (Skip to Question 62)

60. Do those corrective measures involve economic penalties?<sub>51</sub>

- 1 Yes
- 2 No (Skip to Question 62)

61. Have any economic penalties been assessed in the past 12 months?<sub>52</sub>

- 1 Yes
- 2 No, we know of no instances where violations of company policy have occurred within the last 12 months.
- 3 No, although we know that there was a minimum of one violation of company policy within the last 12 months.

**\*\*\* GENERAL RECORDKEEPING INFORMATION \*\*\***

62. How long are personnel records on terminated employees retained?

53 — 55 Years (If "forever", code "999")  
(If "unknown", code "UK \_")

63. Do you keep employee absenteeism records?<sub>56</sub>

- 1 Yes, showing specific nature of illness where appropriate
- 2 Yes, showing only the type of absence
- 3 Yes, without showing the type of absence
- 4 No

64. What is your rate of unscheduled absenteeism?

57 — 59 days per employee per year (If unknown, code "UK")

65. What is your turnover rate among permanent employees in the nonadministrative areas?

60 — 62 % per year

66. May I see the latest Summary of Occupational Injuries and Illnesses Form (OSHA Form 200)? (OSHA regulations provide for inspection by NIOSH).<sub>18</sub>

- 1 Yes  
2 No (or company does not keep one)

**SURVEYOR: COPY THE FOLLOWING INFORMATION  
FROM THE OSHA FORM 200**

**Occupational Injuries**

- |  |                                     |
|--|-------------------------------------|
| a. Number of deaths (column 1)                         | $\frac{\quad   \quad}{19 \quad 20}$ |
| b. Number of injuries with lost workdays (column 3)    | $\frac{\quad   \quad}{21 \quad 23}$ |
| c. Number of injuries without lost workdays (column 6) | $\frac{\quad   \quad}{24 \quad 26}$ |

**Occupational Illnesses**

- |  |                                     |
|--|-------------------------------------|
| a. Skin diseases or disorders (column 7a)                      | $\frac{\quad   \quad}{27 \quad 29}$ |
| b. Dust diseases of the lungs (column 7b)                      | $\frac{\quad   \quad}{30 \quad 32}$ |
| c. Respiratory conditions due to toxic agents (column 7c)      | $\frac{\quad   \quad}{33 \quad 35}$ |
| d. Poisoning (systemic effects of toxic materials) (column 7d) | $\frac{\quad   \quad}{36 \quad 38}$ |
| e. Disorders due to physical agents (column 7e)                | $\frac{\quad   \quad}{39 \quad 41}$ |
| f. Disorders associated with repeated trauma (column 7g)       | $\frac{\quad   \quad}{42 \quad 44}$ |
| g. Deaths (column 8)   | $\frac{\quad   \quad}{45 \quad 46}$ |
| h. Number of illnesses with lost workdays (column 10)          | $\frac{\quad   \quad}{47 \quad 49}$ |
| i. Number of illnesses without lost workdays (column 13)       | $\frac{\quad   \quad}{50 \quad 52}$ |

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Questionnaire Item Number 54 - Written Reports Required for Safety Inspections  
Questionnaire Item Number 55 - Results of Safety Inspections Routinely Made Available to Workers  
Questionnaire Item Number 56 - Plants Which Have a Regular Preventive Maintenance Program  
Questionnaire Item Number 57 - Regularly Scheduled Safety Training  
Questionnaire Item Number 58 - Existence of a Program to Regularly Assess Worker Awareness of Safety Rules  
Questionnaire Item Number 59 - Plants Taking Corrective Measures for Safety Rule Violations  
Questionnaire Item Number 60 - Corrective Measures for Safety Rule Violations Which Involve Economic Penalties  
Questionnaire Item Number 61 - Assessment of Economic Penalties in the Past Year as a Result of a Safety Rule Enforcement policy

#### Section IV - Industrial Hygiene and Safety Practices

Questionnaire Item Number 47 - Use of Personal Protective Devices Required or Recommended

Questionnaire Item Number 48 - Source of Personal Protective Devices Used by Workers

Questionnaire Item Number 49 - Responsibility for Maintenance of Personal Protective Devices

Questionnaire Item Number 50 - Worker Use of Personal Protective Devices Enforced by Corrective Measures

Questionnaire Item Number 51 - Corrective Measures to Enforce Proper Use

Questionnaire Item Number 52 - Assessment of Economic Penalties in the Past Year as a Result of a Protective Device use policy